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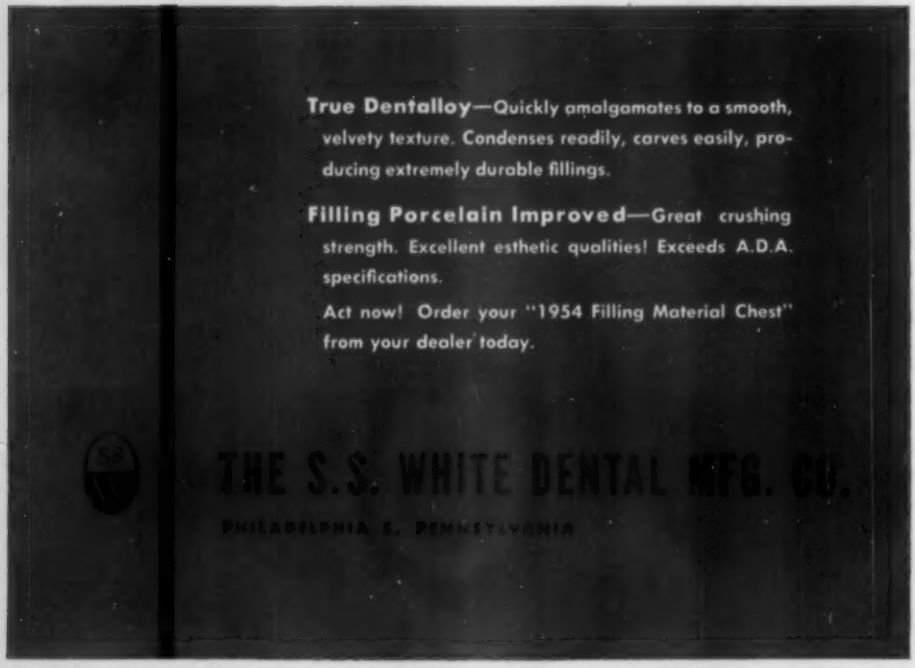
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• • •

The stage may have its "royal family": the Barrymores. But early American dentistry had its "royal family", too: the Parmlys. Of the children and grandchildren of two Parmly brothers (themselves New England farmers), 13 became dentists. Five more dentists became connected by marriage, making eighteen in the profession in two generations of the family. One outstanding member was Eleazar Parmly, born March 13, 1797. He was not only a distinguished dentist, but at the age of 71 published an 800-page book of poetry titled "Thoughts in Rhyme"; and was an intimate friend of Abraham Lincoln and Horace Greeley. His business acumen was above average too: at his death he left a fortune of $3,000,000, built up principally through investments in real estate.

• • •

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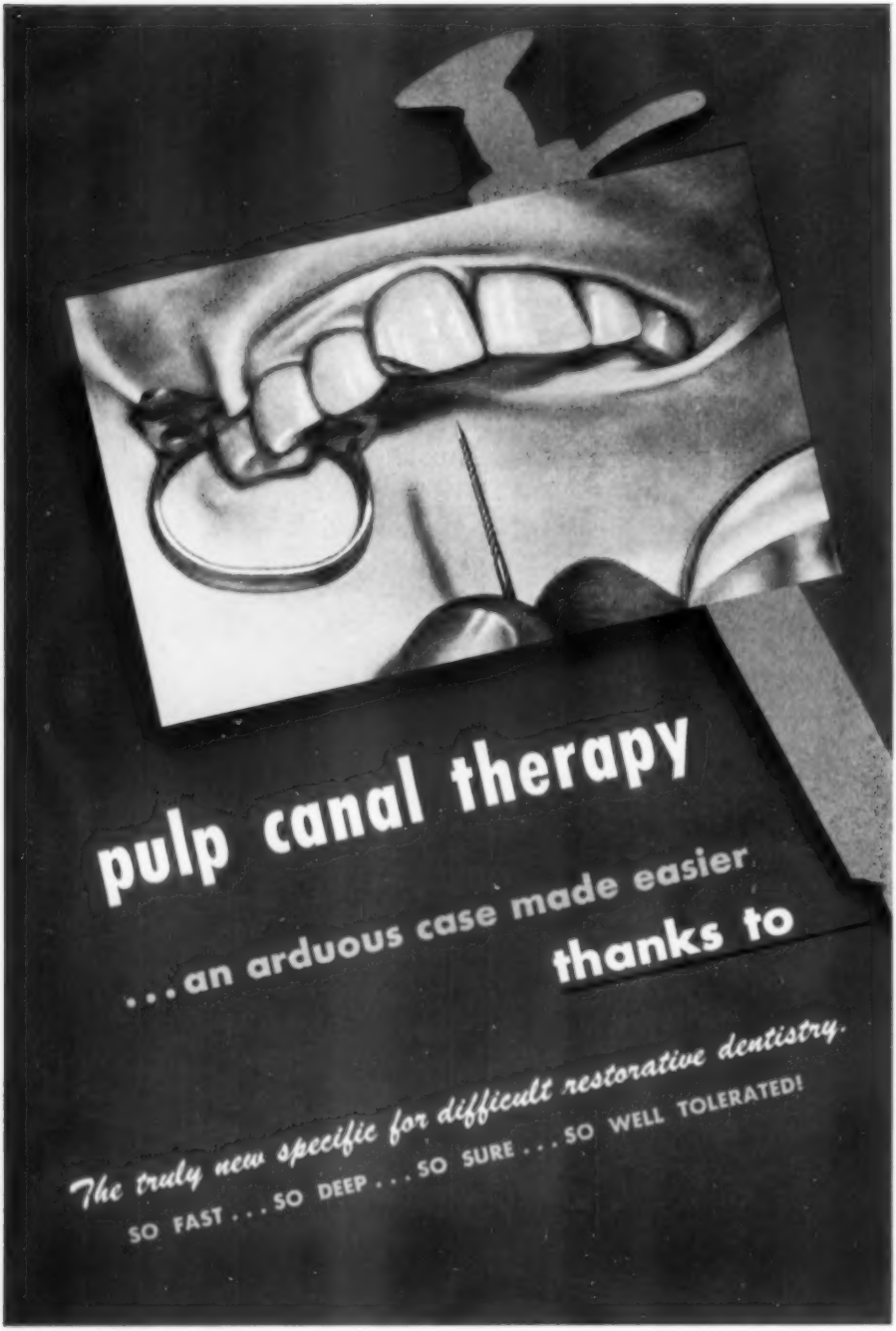
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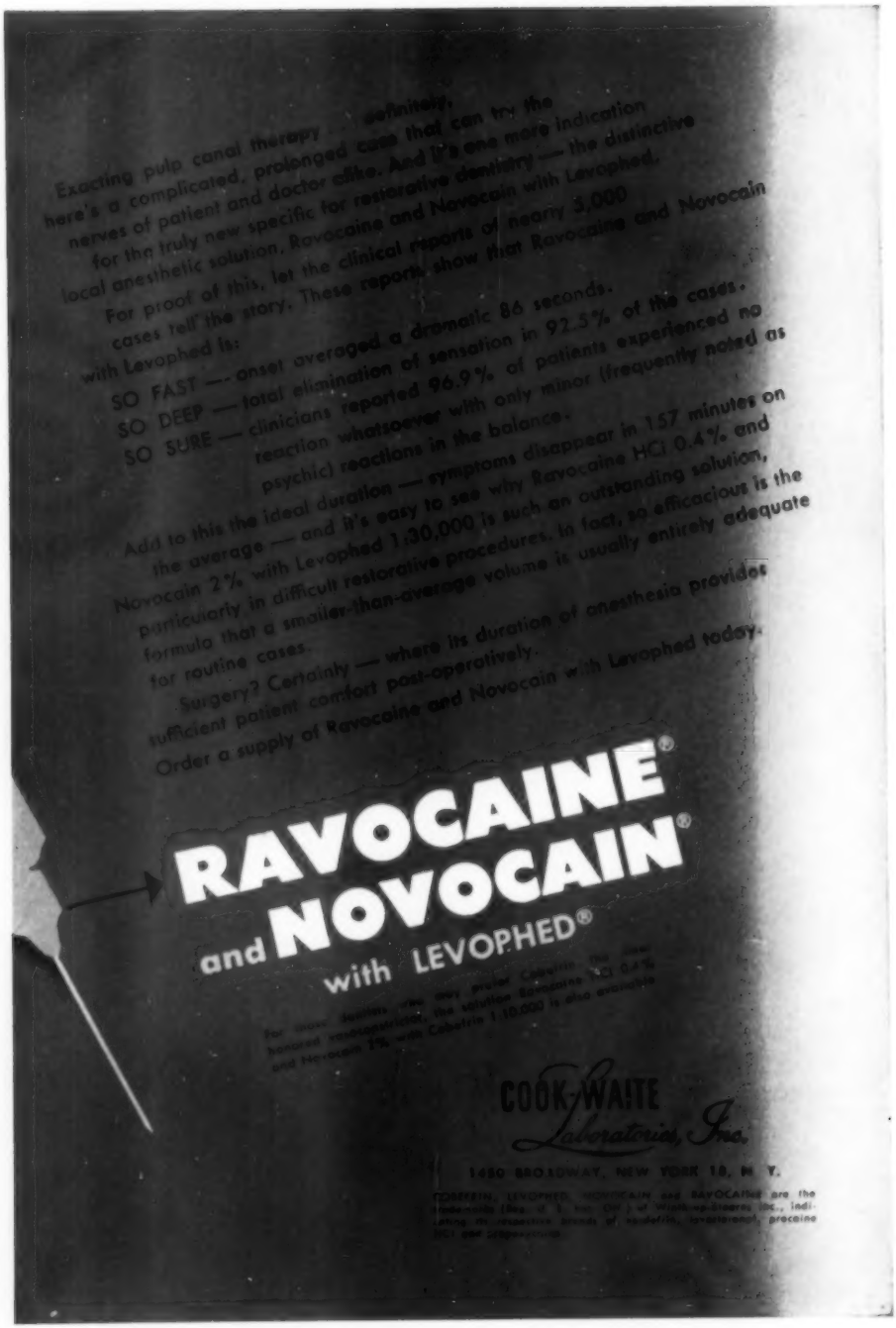
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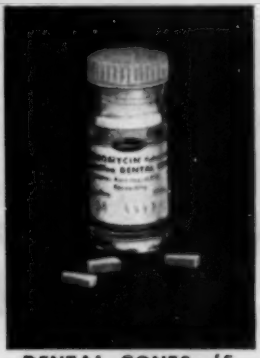

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Immediate prosthesis for the resected mandible

H. H. Niebel, D.D.S.; M. J. Healey,† M.D.; E. W. Neenan,‡ D.D.S., and B. M. Hoffman,§ D.D.S., Bronx, N. Y.*

One of the most challenging problems confronting the prosthodontist at the present time is the cosmetic and functional reconstruction of the resected mandible. The search for a method of immediate and permanent replacement of this structure had led to the use of various materials and technics.

Freeman[1] reports several cases where Vitallium plates were used to immobilize the bony ends after resection of the mandible. He states that although the use of bars and plates in the mandible has been decried by others,[2] technics, rather than the appliances employed, have been at fault.

Conley and Pack[3] describe a method of fixing a bone graft firmly and permanently in place by the use of a stainless steel bone plate; however, the plate itself was not used as the prosthetic restoration.

Castigliano and Gross[4] report a case of advanced primary neoplasm treated by preoperative irradiation therapy, followed by radical resection of the mandible and immediate prosthetic replacement. The prosthesis consisted of a Vitallium frame, which was attached to the remaining mandibular fragment by three small Vitallium screws. An 18

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†Attending, general surgery, Veterans Administration Hospital.

‡Director, dental services, Veterans Administration West Side Hospital, Chicago.

§Dental service, Veterans Administration Hospital.

1. Freeman, B. S. The use of vitallium plates to maintain function following resection of the mandible. Plast. & Reconstruct. Surg. 3:73 Jan. 1948.

2. Ivy, R. H., and Curtis, L. Operative treatment of losses of substance of mandible, with special reference to fixation of edentulous fragments. Surg., Gynec. & Obst. 52:849 April 1931.

3. Conley, J. J., and Pack, G. T. Surgical treatment of malignant tumors of the inferior alveolus and mandible. Arch. Otolaryng. 50:513 Nov. 1949.

4. Castigliano, S. G., and Gross, P. P. Immediate prosthesis following radical resection in advanced primary malignant neoplasm of the mandible. J. Oral Surg. 9:31 Jan. 1951.

month follow-up revealed good callus formation and stabilization at the site of junction of the prosthesis to the mandibular fragment.

Soderberg, Jennings and McNelly[5] report a case where the missing portion of the mandible was replaced with cancellous bone from the ilium, held in place with a tantalum tray. The tray was shaped and perforated with multiple small holes prior to the operation to allow better tissue approximation to the graft. During the operation the tray was wired to position and packed with the bone fragments. The tantalum tray was ultimately removed.

Winter[6] in 1945 advocated the use of a Vitallium prosthesis after a resection of the anterior portion of the mandible, but he has not reported any follow-up observations.

Arandes[7] advocates the use of acrylic resin in a surgical prosthesis of the mandible. He reports a case of epidermoid carcinoma of the floor of the mouth and the mandible, which was treated by irradiation and subsequent resection. In this case a temporary Vitallium plate was inserted for the stabilization of the remaining mandibular fragments. After two months the plate was removed, and an acrylic prosthesis was inserted to replace the body and part of the ascending rami.

It was felt that neither the materials nor the technics employed adequately fulfilled the requirements for the permanent, immediate replacement of the resected mandible. Accordingly, methyl methacrylate was selected and used in a further effort to find a suitable material which might lend itself more readily to the standardization of technic.

PROCEDURE

The procedure developed is as follows: After the surgeon has determined the site or sites of transection, the patient is referred to the dental service for construction of the prosthetic restoration. If the patient possesses suitable dentition, a guide-plane is cast and attached to the teeth on the uninvolved side. This appliance limits the mandibular movement both vertically and laterally, stabilizes the jaw after surgery and prevents undue stress on the sutured muscles (Fig. 1, above).

MEASUREMENTS OF MANDIBLE

Under local anesthesia direct measurements of the patient's mandible are obtained with the aid of calipers (Fig. 1, center). These measurements (Fig. 1, below) include a, the superior-inferior dimension of the mandible at the line of transection; b, the distance from the lower border of the symphysis to the angle of the ramus; c, the distance from the lower border of the symphysis to the head of the condyloid process; d, the distance from the condyle to the angle of the ramus; e, the distance from the angle of the ramus to the opposite angle; f, the distance from the head of the condyloid process to the head of the opposite condyloid process; and g, h, intraoral distances from the crest of the alveolar ridge on one side to the crest on the opposite side at two arbitrary points measured from the midline of the alveolar ridge.

Measurements alone, however, are not sufficient to duplicate the entire mandible. The angle formed by the ramus with the horizontal body must be recorded accurately. Unless this is done, a large margin of error will result in the over-all dimensions. The presence of the parotid

5. Soderberg, B. N.; Jennings, H. B., and McNelly, J. E. Restoration of the jaw. U. S. Armed Forces M. J. 3:1423 Oct. 1952.

6. Winter, L.; Lifton, J. C., and McQuillan, A. S. Embedment of a vitallium mandibular prosthesis as an integral part of the operation for the removal of an adamantinoma. Am. J. Surg. 69:318 Sept. 1945.

7. Arandes Adan, R. Protesis con resina acrilica en la extirpación del maxilar inferior por cáncer. Med. clin. 12:329 May 1949.

gland and the buccal fat pad prevents the accurate external determination of the angle. Therefore, roentgenograms are essential for the determination of this factor as well as for the verification of the other measurements. The following roentgenograms have been found indispensable for these purposes: (1) submental vertex films showing the curvature of the mandible and the distance between the rami at the angles, (2) lateral views of the angle of the ramus, (3) intraoral and

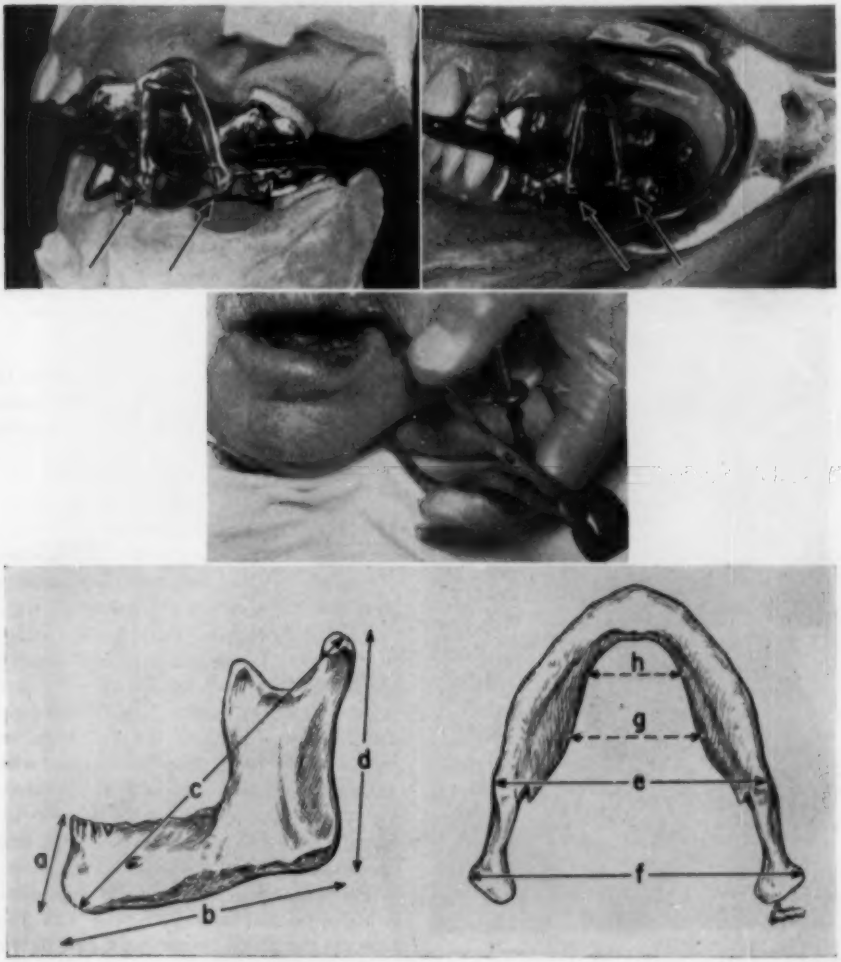

Fig. 1 • Above: Guide-plane to limit mandibular movement and to stabilize remaining fragment after surgery. Note screws to permit removal of loop. Center: Direct measurement of patient's mandible with calipers. Below: Measurements required for duplication of mandible

occlusal dental films at the site(s) of transection.

Laminagrams of the temporomandibular joint also are desirable to show the contour and size of the condyle and its relation to the coronoid process. All roentgenograms except intraoral occlusal roentgenograms and laminagrams are taken from a distance of 72 inches to minimize distortion. An occlusal roentgenogram is taken from approximately 20 inches.

Fig. 2 • Above: Marking line of transection. Center: Impaction of stainless steel pins into cortex of remaining mandibular fragment. Below: Prosthesis wired in position

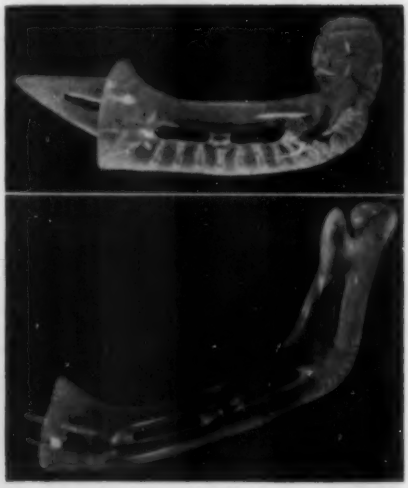

Fig. 3 • Above: Prosthesis with wedge-shaped insert of acrylic resin with open center. Below: Prosthesis with insert of flat stainless steel

WAX CASTS

To serve as a starting point for all cases of mandibular reconstruction, three standard latex molds are prepared from three mandibles, one considered average in its over-all dimensions, one smaller and one larger. Wax is softened and poured into the molds; and three casts are formed, identical to the three selected mandibles. The wax cast with measurements most closely approximating the recorded measurements is selected. This cast is then altered so that the measurements coincide. Precise reproduction of the angle of the mandible is accomplished by cutting the wax and altering the angle on the wax cast to the exact measurement, as previously recorded by direct measurement and by roentgenograms.

Fig. 4 • a, c: Before resection of anterior portion of mandible. Line of transection was 1 cm. posterior to mental foramen bilaterally. b: A month after operation. d: Ten days after operation. e, f: Three weeks after left hemimandibulectomy

The resection of an oral lesion entails the loss of much soft tissue. Reconstruction of the mandible to its normal configuration will usually result in undesirable tension of the overlying soft parts when they are sutured in place. Therefore, the superior-inferior dimension of the body, with or without the ramus as the case requires, is decreased by a third to minimize this tension. Only at the point(s) where the prosthesis is joined to the mandible is the exact dimension allowed to remain.

In order to effect junction with the remaining fragment of the mandible, various types of attachments have been tried. In the early restorations, two flat stainless steel pins were imbedded in the prosthesis and inserted into the cortex of the remaining mandible (Fig. 2). This technic was abandoned in favor of one designed to give even greater stability; a wedge-shaped insert of acrylic resin with an open center was formed on the abutting end as an extension of the prosthesis (Fig. 3, above).

At the time of resection, the medullary cavity of the remaining mandible is curetted sufficiently to permit the impaction of the acrylic insert. As the prosthesis is inserted, the residual portions of the medullary curettings are impacted into the open center of the insert. This will serve ultimately as a bridge of bone which permanently secures the prosthesis to the mandible.

In recent cases this device has been constructed of flat stainless steel to permit slight adjustments at the time of insertion, should the apposition not be perfect (Fig. 3, below). This stainless steel locking device is imbedded in the end of the wax cast; care is taken to follow both the curve and angulation of the remaining mandible to avoid torque.

COMPLETION OF PROSTHESIS

The finished wax case is now invested, packed with methyl methacrylate polymer in granular form, mixed with a liquid monomer. This mixture is processed under pressure at a temperature of 158° F. for 2½ hours and then at a temperature of 212° F. for 21½ hours. After being cured, the prosthesis is cleaned and polished. Three holes are drilled at the transected end of the prosthesis to facilitate its fixation by wires through similar perforations in the remaining mandibular fragment. If the prosthesis includes the entire ascending ramus, perforations are made also at the inferior border of the angle of the ramus and at the upper border of the coronoid process for attachment of the masseter, internal pterygoid and temporal muscles. Should the restoration include the symphysis, similar perforations are drilled at the inferior border of the symphysis for attachment of the geniohyoid muscle.

In earlier cases the prosthesis was roughened over the regions of muscle attachment. Later, small perforations were drilled throughout the entire prosthesis. It has since been determined, however, that better results are achieved when large apertures are cut in the prosthetic restoration, allowing the openings to be occupied with fibrous connective tissue (Fig. 3, below).

The prosthesis is sterilized prior to the operation by a 10 minute scrubbing with a germicidal detergent followed by a 20 minute immersion in a 1:1,000 solution of benzalkonium chloride. The dentist is a member of the surgical team and is present at the operation to make any necessary adjustments of the prosthesis. These minor alterations can be accomplished by the use of a dental engine in the operating room. The handpiece of the engine is sterilized, and the arm is covered with a sterile sleeve.

This method of primary reconstruction has been used in seven cases of advanced carcinoma in which it was necessary to remove varying amounts of the mandibular bone (Fig. 4). Some of these cases were not considered ideally suited

for this technic of reconstruction. In two of the seven cases, the patients died with the recurrence of the disease; in two cases exposures of the prosthesis resulted, in one case intraorally, in the other extraorally. In the latter case, the opening was closed successfully; the intraoral exposure still persists. In the three remaining cases, the patients had uneventful recoveries after primary reconstruction. In the successful cases, eight months is the longest interval that has elapsed since the insertion of the prosthesis. The cases are being followed carefully to observe any clinical manifestations of unfavorable tissue reaction. Concurrent with this clinical study, a laboratory research project is being conducted with the use of live animals. The results of this study will be reported on its conclusion.

SUMMARY

Methyl methacrylate was used in an effort to find a suitable material for immediate and permanent replacement of the resected mandible. Satisfactory prosthetic mandibles can be produced from detailed measurements and roentgenograms.

The only cause of early failure has been excessive tension of the tissues overlying the implanted prosthesis. The long-range effect of this material on tissue will be reported at the conclusion of clinical and laboratory studies now in progress. It is hoped that this report will stimulate further investigation of this and other materials that may be adaptable for use in this important phase of surgical prosthetic reconstruction.

Functional mouth protectors for contact sports

George Watts, D.D.S.; Archie Woolard, D.D.S., and Carl E. Singer, D.D.S., Chicago

The two main purposes of this article are (1) to stress the necessity for mouth protectors in contact sports and (2) to present a simplified technic by which the basic requirements can be incorporated into a functional mouth protector.

A mouth protector, any device affording protection to the lips, teeth, bony supporting structure and temporomandibular joint, may be merely a piece of sponge rubber held between the teeth, or it may be an expensive, elaborately constructed device fitted to the teeth. The idea of a mouth protector is not new in athletics and certainly not in dentistry. The need for such a device was realized as far back as 1927.[1] Boxers began to desire something to protect them from the violent blows they received—blows that lacerated lips and fractured teeth and bony supporting structures, blows that sometimes resulted in death.

The dentist became interested in helping athletes gain this protection. Mouth

College of Dentistry, University of Illinois.

1. Abrams, A. M. Practical hints. D. Digest 36:200 March 1930.

protectors were fabricated; as time went by, descriptions of various technics for their construction were published. A satisfactory mouth protector must be so constructed that it (1) affords maximum protection, (2) will not be rejected by the athlete because it encroaches on his airway when he is forced to breathe through his mouth, (3) will not make speech difficult or impossible, (4) will not be uncomfortable and (5) will remain in place.

In view of the fact that functional mouth protectors have been developed for some time, it is surprising that they are not more popular among amateur athletes. One of the reasons is the failure of the dental profession to educate the laity concerning the absolute necessity of the use of mouth protectors in contact sports. Another reason is that the technics used in their fabrication have made the cost prohibitive in the majority of cases.

A recent survey of 62 colleges, made by the University of Missouri, showed that 733 dental injuries were incurred in one football season.[2] Cathcart[3] states that a survey recently conducted in three states showed that over 50 per cent of injuries to high school players occur in and about the oral cavity. With the great increase in number of participants in high school, college and even grammar school contact sports, the number of dental injuries, if accurately compiled to include injuries of all participants, would prove astounding.

A functional mouth protector not only lends protection to the oral cavity and associated structures but also minimizes the force of blows transmitted to the brains—blows which might lead to unconsciousness, concussion with permanent or cumulative injury to the brain and, in extreme cases, even to death.

Schools spend on an average $90 to $120 annually to outfit each football player with protective clothing, which affords him protection only for those regions in which 48 per cent of the injuries occur. Only a limited number of schools make any attempt to provide any sort of protection for the region where 52 per cent of the injuries occur. If the public is convinced of and educated to the necessity of mouth protectors in contact sports, it will insist that they be made available to the young people participating in any and all contact sports. The magazine *Life*[4] with the controversial pictures of misnamed players who had lost their anterior teeth while playing football probably did more in the way of public education in the need of some form of mouth protection than the dental profession had done in years. As the situation stands today, something must be done to make mouth protection available to all school athletes; otherwise the stigma associated with contact sport injuries will increase to the point where such sports will be discouraged and frowned on.

Every practicing dentist should recognize the importance of this problem of protective dentistry and should do his part in its solution. For the most part, it is a problem of making functional mouth protectors available to all amateur athletes participating in contact sports. The first necessity is a technic which incorporates the following features:

1. The apparatus is simple in design and construction; it provides ample functional protection.
2. The making and adaptation of the apparatus require a limited amount of time in the dental chair.
3. A limited amount of laboratory time is required.
4. The expense of materials used in the preliminary work is kept at a minimum; the materials best adapted to the

2. Vanet, Randy. Gridiron challenge. D. Survey 27:1258 Sept. 1951.
3. Cathcart, J. F. Mouth protectors for contact sports. D. Digest 57:346 Aug. 1951.
4. The fighting Irish look tough again. Life 33:60 Sept. 29, 1952.

purpose are used in the finished apparatus.

TECHNIC FOR CONSTRUCTION

The first step in the construction of a mouth protector consists of recording the patient's normal bite in wax. One and a half sheets of soft baseplate wax is heated and folded together to form a horseshoe bite-block (illustration, above left). The block is warmed and inserted in the mouth, and the patient is instructed to bite. A small wax spatula is inserted in the block close to the lower occlusal plane between the anterior teeth to prevent complete closure. Wax 2 mm. in thickness is desirable between the incisal edges of the anterior teeth. The patient is instructed to bite and to thrust the tongue

Above left: Horseshoe-shaped bite-block with instrument inserted. Above right: Adapted bite-block in mouth. Center left: Cross section of bite-block showing relative thickness of wax. Center right: Cross section of completed investment before and after wax elimination. Below left: Finished mouthpiece in place. Below right: Individually made (left) and stock (right) mouthpieces. Compare size and bulkiness

forward as far as possible to adapt the wax to the lingual surfaces of the upper teeth. The operator adapts the labial and buccal surfaces with his fingers and thumbs (illustration, above right); the upper lip is pressed down over the wax as in muscle trimming of a snap impression. Overextension and muscle interference are to be avoided here also.

The wax impression is removed from the mouth, chilled and trimmed with a knife. All wax below the occlusal surface of the lower teeth is removed. Care must be taken to ensure that the upper and lower jaws are not locked together in occlusion in the finished product. Sufficient wax is removed from the lingual edge so that the patient can speak when the impression is reinserted. The labial and buccal flange is trimmed to approximately 2 mm. thickness (illustration, center left). The impression is trimmed to terminate distally at the six year molar. When reinserted, the impression is readapted to correct any distortion that may have occurred in the trimming.

While the wax impression is still in place, the patient is instructed to move the mandible to the right and left; it is necessary that sufficient wax be retained on either side of the cusp imprints to permit the lower teeth to contact it in all excursions of the mandible. After the wax impression is taken and trimmed to form properly, the remaining steps are performed in the laboratory.

The impression is washed and dried. To gain added retention, a slight excess ring of wax may be added to the cervical region of each tooth. This wax will make the finished product fit snugly around each tooth; care must be taken, however, as an excess of wax may impinge on and traumatize the gingiva. The wax impression is then immersed in green soap or in any commercially prepared product which will reduce surface tension.

For the investment procedure, the upper half of a denture flask should be used, since its greater depth is necessary to accommodate the high flange on the wax impression. This half of the flask is filled with a good mix of stone, and some of the same mix is vibrated into the wax impression of the upper teeth. Special care must be exercised at this time so that no air is trapped in the impression. The impression is then placed in the flask deep enough that the flat surface of the impression is even with the edges of the surface formed by the edges of the flask.

The upper half of the flask containing the invested impression is allowed to set. The surface is covered with petroleum jelly when the stone is set, but care must be exercised not to get any of the petroleum jelly into the incisal indentations of the exposed underside of the impression.

The stone is then poured into the lower half of the flask and vibrated into the lower incisal grooves of the invested wax impression. Next, the invested impression is picked up and turned over and placed on the lower half of the flask; the excess of stone is allowed to escape from the sides. After the stone has set, the flask is boiled for five minutes, opened and flushed with boiling water (illustration, center right). Each half of the flask is painted with water glass, or any commercial case paint, while it is still warm.

After these steps are completed, vellum acrylic resin is packed in the same manner as the standard dental acrylic resins and cured in boiling water for half an hour. The flask must be cooled completely before an attempt is made to remove the mouth protector. Immersion in cold water will speed up this process. No precautions are necessary for this part of the procedure. Finishing is accomplished in the same manner as with denture acrylic resins, but high polishing is eliminated (illustration, below left).

For packing with vellum rubber, one and a half sheets is sufficient for even the largest mouth protector. The half sheet is cut into small pieces (quarter inch squares), while the large piece is

cut into strips about half an inch wide. These pieces of rubber are placed on a metal plate (pie tin or cookie sheet), covered with a towel and steamed over the boil-out pan until they are warm and pliable. The small pieces are packed into the deepest part of the stone mold. Cellophane is placed between each half of the flask, and a test pack is made. The cellophane is removed before the packed case is placed in the vulcanizer, where it is allowed to remain for one hour. For the completion of the finishing, a sandpaper arbor is used. The apparatus is now ready (illustration, below right).

REPORT OF USE OF APPARATUS

By this technic, 26 mouth protectors were fabricated for members of St. Rita's High School football team. The boys in the line were equipped with vellum rubber mouth protectors, while the backfield team members were equipped with vellum acrylic protectors. Of the materials tested, vellum rubber proved to be most desirable; but since vulcanizers are not available to all dentists, it is fortunate that vellum acrylic is a satisfactory material.

Although the football season had only begun, the team had already incurred four dental injuries before the mouth protectors became available. The injuries included one fractured central tooth involving the pulp, two fractured central teeth not involving the pulp and a fractured mandible. At the end of the season, dental injuries had been reduced 100 per cent. The opposing teams in the same games had suffered an average of two injuries in and about the oral cavity. This record seems to indicate that the device will serve the purpose for which it is intended.

During the development of the project, routine records were made of the boys' teeth. Only 5 of the 26 boys had a family dentist; 21 had none; 13 requested dental care when they learned of the condition of their teeth. Thus, the effort to make a contribution to preventive dental procedure led incidentally to a new means of introducing the teen-ager to the dental office.

A Dilemma of Science • Modern scientific education is presented with a well-known dilemma. The amount of facts in modern science, and in any of its smallest branches, is enormous. Life in general, and the academic curriculum in particular, is short. The abundance of factual data, as well as the intricacy of modern scientific techniques, experimental and theoretical, necessitates utmost specialization. This specialization, unavoidable though it is, involves serious danger for both the education of the scientist and the social function of science. *Ludwig von Bertalanffy, "Philosophy of Science in Scientific Education," The Scientific Monthly, 77:233 November 1953.*

Interpretation of roentgenographic details indicating conservative treatment

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Dental roentgenograms are taken for two reasons: (1) to facilitate the diagnosis and (2) to check on the progress and success of dental treatment. By close observation of roentgenographic films, especially with the aid of an illuminated magnifying glass, fine details can often be observed which escape reproduction because of the necessary shortcomings of the printing process. The additional information leads to a more accurate diagnosis and frequently to more conservative treatment.

Structures such as the lamina dura, dentin, enamel and root canals can be reproduced easily in roentgenograms, but delicate shadow differences in dentin can be demonstrated only in drawings derived from the films. For example, in a grossly enlarged roentgenogram of an upper bicuspid (Fig. 1, left), the following relevant details may show up in the reproduction: A, the mesial aspect of an MOD inlay; B, the cement lining; and D, the coronal pulp obscured by secondary dentin. At C and E, the vital reaction within the dentin is clearly evident, following at E the direction of the dentinal tubules; it is cut off from the pulp and forms the familiar conical shape of this reaction. To a certain extent, the roentgenogram resembles the histological picture of Furrer (Fig. 1, right).[1]

This reaction has been observed by the author more frequently in upper bicuspids than in any other teeth. In printed dental roentgenograms, however, these formations are rarely, if ever, seen. The upper bicuspids, for instance in Wilson's illustration,[2] merely seem to show this dentinal reaction.

From a large collection of dental roentgenograms five examples were chosen to show the importance of incidental features not readily demonstrable in roentgenograms.

CASE 1

History • For Case 1, that of a 28 year old woman, a routine bitewing examination is interpreted in Figure 2, which shows in the upper right second bicuspid an amalgam filling, A, without a lining and surrounded by a faint dark line, B, which widens toward the cervical part of the crown. This line is followed by a much wider light band, C, which terminates cervically in an arrowlike point. The roentgenographic density of this band almost equals that of the enamel. The coronal end of the pulp canal seems to be filled with secondary dentin.

The tooth was clinically sound. There was no undue reaction, the filling was

1. Furrer, Beatrice. Die Verkalkungszonen bei der Dentin Karies. Inaugural dissertation. Zurich, 1922.
2. Wilson, T. C. Points of detail in radiodontics. D. Radiog. & Photog. 23:21 No. 2, 1950.

well finished, and exploration with a probe showed no sign of secondary caries.

Comment • The dark line is interpreted as carious dentin, probably left at the time of the preparation of the cavity, whereas the white band can be described as the biological reaction to the combined stimulus of caries and the metallic restoration. The conical shape of the white band, C, underneath the filling can be explained by the course of the dentinal fibers and tubules.

CASE 2

History • In Case 2, the roentgenographic examination, interpreted in Figure 3, shows that the clinically sound lower right first molar of a 20 year old man has an occlusal amalgam restoration, E, and apparently no lining. Underneath this filling and closely following it is a dark line, D. Between the two pulp horns there is a long white band visible, C; its density almost equals that of the metal. The pulp chamber is much narrower than that of the neighboring molar. A large denticle is visible near the entrance to the distal canal. The distal cervical aspect of the coronal dentin seems to be affected by cervical caries, A. Underneath the distal part of the filling a faint light cone, B, is pointing toward the distal horn.

Comment • The interpretation of this film is similar to that of Case 1. The density of the transparent zone, separating the caries from the pulp, is especially noteworthy.

CASE 3

History • The 22 year old woman in Case 3 was first seen in February 1950. Figure 4, left, interpreted from the roentgenographic examination, reveals in a clinically sound upper left second bicuspid a deep distal cavity, C, pulp that is not involved, and a coronal part filled with

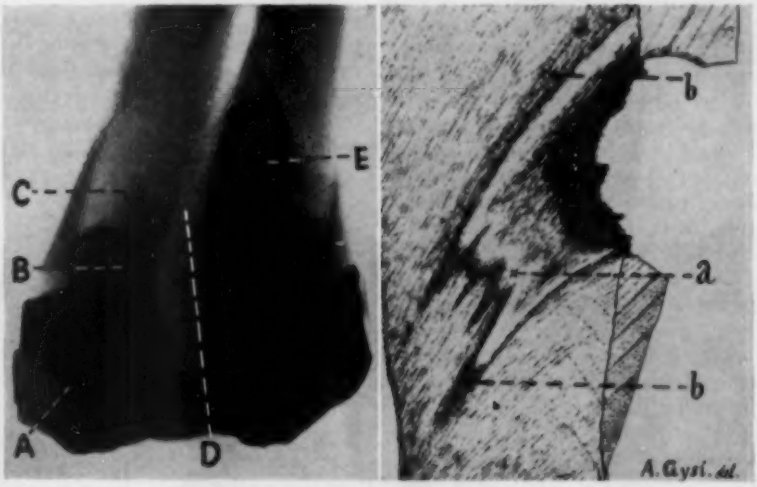


Fig. 1 • Left: Grossly enlarged roentgenogram of upper bicuspid. A, mesial aspect of MOD inlay; B, cement lining; D, coronal pulp obscured by secondary dentin; C, E, zones of vital reaction. Right: Part of ground section of carious bicuspid impregnated with mercuric chloride and ammonium sulfate, viewed by transmitted light. a, transparent zone; b, zone of vital reaction

Fig. 2 • Upper right second bicuspid. A, amalgam filling; B, carious dentin; C, dentin zone of vital reaction

secondary dentin. Underneath the occlusomesial part of the amalgam restoration, A, vital reaction in the dentin is visible in the form of a cone, B, which is brightest next to the filling.

The soft carious dentin was removed with excavators, with great care taken not to exert any pressure in the direction of the secondary dentin and the pulp. The cavity was filled with a temporary zinc oxide-asbestos-resin-eugenol cement. Two months later the tooth was prepared and filled with amalgam over a similar zinc oxide lining. The patient was seen a year later; and a film was taken, which showed a cone-shaped zone of reaction next to the zinc oxide cement. Sixteen months later the film was taken which is interpreted in Figure 4, right; the vital reaction, A, next to and underneath the zinc oxide cement is clearly evident. A dark band denotes the presence of hard caries left at the bottom of the cavity.

Comment • The findings in this case are important because they show that the reaction in the dentin took place within two years after the filling was made. In the cleansing of the carious cavity, the dental practitioner is faced daily with the question as to whether it is desirable, possible or essential to "sterilize" mechanically the bottom of a carious cavity or whether it is better to excavate toward the pulp, even risking an exposure, provided that a clinically healthy pulp is present. The findings in this case show that the carious process did not advance but rather that it was checked.

CASE 4

History • In Case 4, a routine bitewing film of an upper second bicuspid showed that the tooth had an MOD gold inlay with caries underneath the filling on the distal side. Although for the time being the pulp seemed clinically healthy and without any reaction, the patient on being questioned reported that approximately four months before this visit he had experienced spontaneous pain on one occasion only for about one to two hours. The distal part of the gold inlay was removed in such a way that the pulp was irritated as little as possible.

On a second film, interpreted in Figure 5, the distolingual enamel wall is visible at A. B is the carious cavity, separated from the pulp by transparent dentin and secondary dentin within the pulp canal, C. Mesially, there is a carious cone, surrounded by transparent dentin, D. The entire coronal region has been transformed into transparent dentin. The coronal part of the pulp chamber is filled entirely with secondary dentin, and the

Fig. 3 • Lower right first molar. A, cervical caries; B, light cone; C, transparent dentin; D, dark line of caries; E, amalgam restoration. Previously carious cavity is separated from pulp by wide band of transparent dentin, C

pulp appears to be much shorter than that of the first bicuspid. The lamina dura of the second bicuspid is roentgenographically intact.

Comment • The fact that the patient suffered from a short single period of irritation of the pulp does not necessarily lead to the conclusion that hyperemia or pulpitis was present at the time. Otherwise, it would be necessary to deduce that the pulp has recovered completely with proof supplied by the formation of secondary dentin, intact lamina dura and the absence of any symptoms characteristic of such a pathologic condition. It is possible also that the attack of pain was due to food residue lodged in the cavity.

CASE 5

History • A 20 year old girl complained of pain in her left mandible, induced especially by cold food or drink. After the first irritation, a "nagging" pain would last for hours. There never was any spontaneous pain during the evening. A loose mesial amalgam filling was removed; and a filling of a very hard-setting temporary cement was inserted. A bitewing film revealed little secondary decay next to the filling. Two months later the patient was seen again, when, after careful removal of soft tissue, the cavity was filled with a temporary thymol-cement filling. After six weeks the patient reported having very slight "feeling" in this tooth; apparently cold did not then affect the pulp. As it was not likely that the pulp was exposed and as great care was taken not to irritate this organ, the bottom of the cavity was lined with a paste consisting of calcium hydroxide as powder, silver nitrate in Canada balsam and clove oil as liquid. The cavity was closed with zinc oxide-asbestos-resin-eugenol cement. After ten weeks the pulp was still not "at ease," for the patient was still aware of the tooth. The temporary filling was changed to a thymol zinc oxide-eugenol dressing, and a film of the entire tooth was taken.

This film, illustrated in Figure 6, left, shows A, the dressing; B, an apparently empty space; C, dentin stained with silver nitrate; D, a widened periodontal membrane around the apex of one root. Since no lamina dura is present in this region, a reaction can be observed in the bone, especially noticeable around the mesial root, E, and to a lesser degree near the apex of the distal root, F. In spite of these findings, it was decided to observe the pulp for a longer period and not to touch the cavity. Eventually the pulp ceased to show irritation. Occasional electric tests revealed its vitality. The cavity was filled with amalgam over a

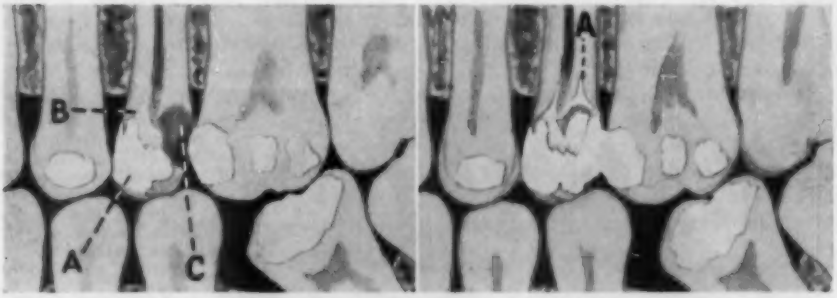


Fig. 4 • Left: Upper left second bicuspid. A, amalgam restoration; B, cone of vital reaction; C, distal cavity. Right: Same tooth two years after beginning of treatment. Vital reaction is evident at A

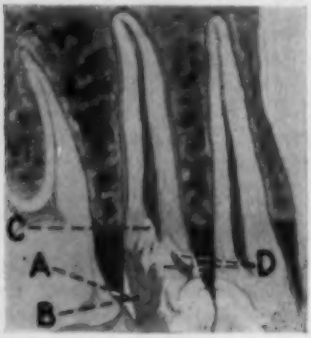


Fig. 5 • Upper right second bicuspid. Distolingual enamel wall is visible at A. Carious cavity, B, is separated from pulp by transparent dentin and secondary dentin within pulp canal, C. Mesial carious cone is surrounded by transparent dentin, D

zinc oxide cement lining. Two and a half years after the patient's first visit, another film, illustrated in Figure 6, right, combined with an electric test revealed a live pulp, a restored lamina dura and normal bone around both roots.

Comment • Various features of this case are unusual. It is an important case because eventually a complete return to health took place. A study of textbooks on dental roentgenology reveals two comparable cases. McCall and Wald[3] discuss a case of early periapical infection, in which there was a thickening of the periodontal membrane at the apex of the mesial root of a carious lower first permanent molar. They state that even if the pulp of such a tooth is still alive, the tooth is nevertheless a poor risk. Another example is given by Simpson,[4] who advises dentists to take more roentgenograms and who claims:

> The pulpless tooth frenzy and the present shirking of canal operations have led to extreme conservation with an epidemic of degenerating pulps. Pulps already infected from advanced caries are retained; septic dentin is left to avoid pulp exposure. . . . The radiographic evidence in this example is the distention of the lamina dura and a slight thickening of the periodontal membrane around the apical third of the root. . . .

The careful interpretation of the films in the case just reported led to conservative treatment. In other cases also, it is possible that as long as the "septic dentin" has been thoroughly disinfected, it may eventually be rendered sterile and thus innocuous. Conservative dentistry does have a place in judicious treatment.

SUMMARY

Five cases were selected from a considerable number to show how a study of the

3. McCall, J. O., and Wald, S. S. Clinical dental roentgenology: technic and interpretation, ed. 2. Philadelphia, W. B. Saunders Co., 1947, p. 177.

4. Simpson, C. O. Advanced radiodontic interpretation, ed. 3. London, Henry Kimpton, 1947, p. 55, 56.

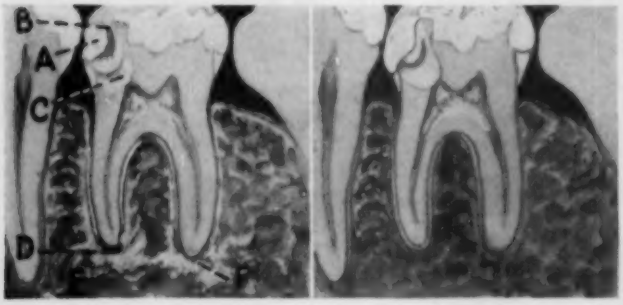


Fig. 6 • Left: Lower left first molar. A, temporary dressing; B, space; C, dentin; D, widened periodontal membrane around apex of mesial root; E, F, bone reaction. Right: Same tooth after 2½ years of conservative treatment. Note recovery of pulp, restitution of lamina dura and resolution of condensing osteitis

roentgenographic films may reveal details not reproduced in the roentgenograms. In these cases, drawings, made to illustrate the finer details, indicated conservative treatment. In four cases the pulp was saved; in the fifth case the damaged pulp and the irritated tissues around the apexes proved to be normal two and a half years after the beginning of the treatment. Careful interpretation of details in roentgenographic films may place greater emphasis on conservative dentistry.

208 Bickenhall Mansions

Tentative standard methods of testing precious metal dental materials

R. C. Brumfield, Buffalo

Structures and appliances of various types have long been used in the mouth for dental purposes. During the present century, the use of such appliances has multiplied. Interest in the construction of these appliances has been keen, and this interest has produced great improvements. The traditional attitude of the dental profession toward the design of dental appliances has been almost wholly artistic; that is, the design of the dental appliances has been based largely on rule-of-thumb methods which had their origin in the personal experiences of leaders in the dental profession, rather than on written principles and laws.

A gradual change in attitude now manifests itself in a keen desire on the part of members of the profession to understand more of the underlying factors which control the services rendered by these appliances and to coordinate these basic factors in order to produce improved structures which will give better performance. This interest warrants a brief statement on the underlying philosophy which explains the performance of dental structures.

PHILOSOPHY UNDERLYING STRUCTURAL DENTISTRY

A structure may be defined broadly as an arrangement of material in a form designed to accomplish its purpose through the transmission or absorption of force. This definition applies equally to a small dental structure to be used in the mouth and to a mighty suspension bridge.

In dentistry it has been the custom to use the term "design" in connection with dental structures. Such design usually consists in a rough distribution of material in the dental structure according to the best judgment of the constructor and arbitrary methods which often are not grounded on any basic prin-

Developed by the Technical Committee, Dental Gold Institute, 443 Delaware Avenue, Buffalo 2.

Dental Gold Institute, past chairman and past secretary of the Technical Committee.

ciple. If the suspension bridge were designed by methods of the same type, disastrous bridge failures would be frequent. It may be inferred that dental structures so designed often fail in the effective accomplishment of their purposes, even though failure is not as spectacular as it would be in the case of the suspension bridge.

For the completely coordinated design of a structure, pertinent facts from three independent classes of information are required. The first class, largely statistical, embraces complete information on the loads which are applied to the structure to be designed. In dentistry these loads are primarily forces generated by the muscles of the face and the secondary forces which stem from these primary forces. The evaluation of the forces pertinent to the design of dental structures has just been begun. Notable in this connection are the tests which are now being conducted at Tufts College on bite pressures and which have been recorded to some extent in the *Journal of Dental Research*.[1,2]

The second class of information requires the evaluation of the stresses which are induced in the material of the structure by the forces which are applied to it. Dentistry has made little progress in the computation of such stresses, although some articles along this line are found in dental literature.[3,4] The basis for such computations is available to the dental profession also in great profusion in the literature of structural engineering. Such structural textbooks as *Mechanics of Materials* and *Stresses in Structures* need only to be rewritten from the dental standpoint in order to bring this class of information into full usefulness.

The third required class of information deals with the abilities of the dental materials to sustain satisfactorily the stresses induced in them by the loads applied to the structure. This type of information is more completely available to the dental profession than either of the other two. Almost every reputable manufacturer of dental gold alloys publishes the complete physical properties of his materials. Manufacturers of dental amalgams and other filling materials furnish data on similar properties. Such data are widely distributed and understood in dental circles.

It is not too much to hope that the progress now being made will insure that each of these three classes of information will soon be made widely available to the dental profession and that they will be properly coordinated for the purpose of improving the design and construction of dental appliances.

HISTORY

The manufacturers of dental gold alloys have been alive to these facts. The industry has recognized its responsibility in making available data on the properties of materials which it supplies to dental practitioners. Every responsible manufacturer of dental gold alloys has long been accustomed to publish the properties of his metals and to distribute these publications to his customers.

About 20 years ago, there was published in THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION[5] an article entitled "The Development of Physical Testing of Dental Materials and Specifications for Testing Methods." This article was written by Walter S. Crowell of The S. S. White Dental Manufacturing Company, Philadelphia, Pa., who was then secretary to the technical group repre-

1. Howell, A. H., and Brudevold, Finn. Vertical forces used during chewing of food. J. D. Res. 29:133 April 1950.

2. Manly, R. S., and Vinton, P. A survey of the chewing ability of denture wearers. J. D. Res. 30:314 June 1951.

3. Brumfield, R. C. Dental gold structures. New York, J. F. Jelenko & Co., Inc., 1949, p. 43-72.

4. Smyd, E. S. Dental engineering. J. D. Res. 27:649 Dec. 1948.

5. Crowell, Walter S. The development of physical testing of dental materials and specifications for testing methods. J.A.D.A. 19:87 Jan. 1932.

senting member manufacturers of the American Dental Trade Association, the group which sponsored the specifications. This article made public the work of these technical men in establishing definitions and standard methods of procedure for testing dental gold alloys and for presenting results of these tests to the public. The testing methods and procedures set forth have been used as a standard guide by the leading manufacturers of dental gold alloys from that time until the recent past. Those standards, however, were not amended during the intervening years; and as a result, it has recently become increasingly evident that some of them have become outmoded.

Accordingly, about three years ago, technical men of the leading manufacturers organized again for the purpose, among others, of revising these test methods. The work was conducted under the auspices of the Dental Gold Institute, whose membership embraces 11 leading gold manufacturers in the United States. Technical men of this Institute constitute a permanent committee, charged with the responsibility for all matters of a technical nature which are of common concern to the member companies.

The work of this committee, presented here as a tentative standard, represents a very carefully considered revision of the former standards. During the progress of this work, a large amount of cooperative testing was conducted by the laboratories of the member companies. Results of this interlaboratory testing were compiled and compared as a basis for changes instituted in the standards. In addition to this painstaking work, results have been submitted for criticism to a number of men throughout the country who represent institutions which have long been associated with and interested in test results on dental gold alloys.

The technical men of the Dental Gold Institute herewith present the carefully revised tentative standards on test methods, with the belief that these standards represent a real advance in testing practices and methods and that they will be of material assistance to the dental profession in understanding the structural significance of test results made available for their use in selecting materials for dental structures.

The presentation of this material is followed by a brief statement dealing with significant changes which have been made in the standards and some evaluation of the effect which certain changes may have on test results.

TENTATIVE STANDARD METHODS OF TESTING PRECIOUS METAL DENTAL MATERIALS AND RELATED MATTERS[6]

Section A. Classification of Materials

For the purpose of these Standard Methods, precious metal dental materials will be divided as follows:

1. Wrought Wires
2. Wrought Plates
3. Casting Golds
4. Solders

Section B. Classification of Properties Resulting from Tests

1. *Major Properties:* Those properties considered necessary to describe the

6. The standards are unedited; the wording appears exactly as it was determined by consultation and action of the Committee.

materials adequately. If Physical Properties are published, all Major Properties will be given.

2. *Minor Properties:* Those properties of material which, though important under some circumstances, are not considered essential to a complete description of the material. Publication is optional.

Section C. Definitions of Properties Obtained from Tests

1. *Yield Strength:* The stress, in pounds per square inch, at which a material exhibits a specified limiting permanent set.
2. *Ultimate Tensile Strength:* The maximum tensile stress in pounds per square inch developed in a material when tested to rupture in tension, stress being computed on the basis of the original cross-sectional area.
3. *Modulus of Elasticity:* The ratio within the elastic range of stress in pounds per square inch to corresponding strain in inches per inch.
4. *Modulus of Resilience:* The potential energy, in inch-pounds per cubic inch, that is stored in a material stressed to the yield strength limit in tension.
5. *Percentage Elongation:* The percentage increase in length of a standard gauge length of a tensile test specimen measured after rupture in tension.
6. *Toughness:* Is the total energy, in inch pounds, absorbed by one cubic inch of a material when stressed in tension from zero stress to the breaking strength. Toughness is measured by the total area under the unit-stress-strain curve.
7. *Hardness:* Hardness, for the purpose of these Standard Methods, is defined as resistance to permanent indentation by a penetrator under load. Specifically, it is obtained from the penetrator and load represented by the Baby Brinell test.
8. *Melting Range:* The temperature range in which the material passes from the fully solid state to the fully liquid state.
   a. The Lower Limit of the melting range is that temperature at which liquefaction begins (usually at grain boundaries) on heating the alloy or at which last solidification occurs on cooling.
   b. The Upper Limit of the melting range is defined as that temperature at which the last of the elements in the alloy liquefies on heating or at which solidification first occurs on cooling.
9. *Temperatures:* Temperatures must be published in degrees Fahrenheit. They may be given in both Fahrenheit and Centigrade, at the option of the manufacturer.

Section D. Properties to Be Determined for Each Class (Sec. A) of Material

1. *Wrought Wires:*
   Major Properties (See Sec. B):
   a. Yield Strength
   b. Ultimate Tensile Strength
   c. Percentage Elongation
   d. Lower Limit of Melting Range (Approximate)
   Minor Properties (See Sec. B):
   a. Modulus of Elasticity
   b. Modulus of Resilience
   c. Toughness
   d. Hardness
2. *Casting Golds:*
   Major Properties:
   a, b, c, and d as listed under Wrought Wires
   e. Upper Limit of Melting Range
   f. Hardness

   Note: Yield Strength is classed as a minor property for Class A (soft) inlay golds.

Minor Properties:
a, b and c as listed under Wrought Wires.

3. *Solders:*
Major Properties:
Upper and Lower Limits of Melting Range.
Minor Properties:
All other properties listed under Wrought Wires.

4. *Fabricated Products and Wrought Plates:*
Insofar as possible, the properties of the material of these products are defined as those of the alloy from which each is made, in the condition (that is, cast or wrought) in which it appears in the product.

Section E. Methods for Tensile Test

Data may be obtained from the tensile test for determining yield strength, ultimate tensile strength, percentage of elongation, modulus of elasticity, modulus of resilience and toughness.

(It is contemplated that principles given in A.S.T.M. "Standard Methods of Tension Testing of Metallic Materials" E8-46 shall apply to tension testing of dental golds insofar as possible. Necessary additions and commentaries appear below.)

1. *Test Specimens:*
a. Wrought Wire Specimens. (For use on materials to be used in the wrought condition.) Wrought Wire specimens shall be die-drawn round wires .04 inch ± .004 inch in diameter. The length of the specimen shall be not less than 4½ inches.
b. Cast Gold and Solder Specimens. (For use with materials intended for use in cast form.)
(For the purpose of this specification, a test specimen is a single test rod, whether it be from a multiple-rod casting or from separate castings.)
Cast tensile test specimens shall be .08 inch in diameter ± .01 inch. The length of the cast tensile test specimen shall be at least 4½ inches. The uniformity and reproducibility of cast gold tensile test specimens depend very greatly upon methods used in making the casting. Since it is very desirable that test results be reproducible as between different laboratories, some important factors related to the making of excellent cast gold test specimens are listed in the Appendix, Section I.
c. The Gauge Length. Shall be 2 inches for measuring percentage elongations with all types of specimens.
d. Number of Specimens. The number of specimens tested for each set shall be five in each condition of heat treatment. In testing, particularly with cast golds, it is realized that a satisfactory method of making the casting must be established. For this purpose, as much experimentation shall be permitted as is desired. When the method has been established to the satisfaction of the operator, the specification requires that the published results be the average of the best set of five consecutive sets of five castings. The specimens on a multiple casting shall be considered to be consecutive.
e. Heat Treatment. To soften, heat soak at 1,300°F. for 10 minutes and quickly quench in room temperature water. To heat harden, place in a furnace previously stabilized at 840°F.; heat soak at this temperature for 2 minutes; cool to 480°F. at an approximately uniform rate over a period of 30 minutes. In lieu of the above treatments, a manufacturer may use optional treatments at his discretion.

2. *Extensometer or Strain Gauge:* It is highly desirable that the instrument used for measuring elongation be capable of use on either cast or wrought wire specimens. It is desirable that the extensometer be an averaging one for cast golds, since these test rods are not always perfectly straight. If a nonaveraging gauge is used, it should be applied along an element of the surface which will be in the neutral plane when the bending occurs, which is incidental to application of the tensile test load.
   a. The accuracy of the extensometer shall be ± .00005 inch per inch of gauge length.
   b. Increment of Strain. For all specimens, the increment of strain in the neighborhood of the yield strength should not exceed approximately 5 per cent of the total deformation between zero load and the yield strength. At no stage of loading should the increments of strain exceed 10 per cent of the total at the yield strength.
3. *Testing Machine:* The accuracy of the testing machine shall be within ± 2 per cent of recorded load.
4. *Rupture Within the Gauge Marks:* In testing either wrought wire or cast gold, if the specimen breaks outside the gauge length, it may be repulled in order to obtain rupture within gauge marks. The original marks shall be used for measuring elongations across that ruptured section which occurs within the gauge marks. The highest of the breaking loads obtained, either on the first test or during repulling, shall be used for computing Ultimate Strength.
5. *Graphs:* In plotting the stress-strain diagrams, the scales of stress and strain shall be such that the angle of the straight portion of the curve with the strain axis does not exceed 70 degrees.

   In drawing the stress-strain curve, slight irregularities, which may exist in the plotted points, from zero strain to 20 per cent of the yield strength, may be ignored. The remaining straight portion of the curve shall be the straight line which best represents the plotted points in the elastic range.
6. *Computing Results:* For method of computing results, see Appendix, Sec. II.

Section F. Melting Range

1a. To determine the Upper Limit of the Melting Range, proceed as follows:

Apparatus: A furnace of muffle size comparable to S. S. White Porcelain Furnace No. 3, capable of operating up to 2,400°F. under controlled heating rate; a temperature indicator accurate to within 5°F. or closer; thermocouple wires within the sizes 20 gauge to 22 gauge inclusive; a graphite block about ¼ by ¾ by 1 inch with a prepared depression the size of the ingot and of depth equal to ingot thickness; and a 1 dwt. piece of gold for test. The tip of the thermocouple should be protected from reducing gases and fluxes by a thin quartz tube.

Procedure: Place the graphite block in position on a tray at the center of muffle floor and bring the furnace to within 200°F. of the estimated upper limit of the melting range. Now place a 1 dwt. ingot of the metal to be tested in the previously prepared depression in the graphite block and cover liberally with a good reducing flux. It is highly desirable that the furnace atmosphere be a reducing one or that enough flux be used to main-

tain such an atmosphere around the ingot; otherwise results will be obtained which are too high. Adjust the thermocouple tip to make firm contact with the gold ingot under test and proceed at once to the completion of the test. Set the furnace heating rate for 30°F. (± 5°) per minute and observe the condition of the ingot through a peep hole at frequent intervals when near the probable upper limit of melting range. Keep peep hole closed between observations. That temperature at which the ingot is observed to draw into a globule shall be taken as the upper limit of the melting range. Average 3 tests. Results shall be reported as the nearest 5°F. to this average.

1b. To determine the Lower Limit of the Melting Range:

Apparatus: A tubular furnace not less than 1 inch in diameter capable of being set in a vertical position; an accurate pyrometer; an unstamped ingot of gold ½ inch long by ¼ inch wide by .020 ± .005 inch thick, with 1/16 inch holes drilled 3/16 inch from either end, at the center of the ¼ inch dimension; 1 piece of 20 gauge Platinum or Chromel Wire; and a 300 Gm. weight.

Procedure: Use an Alumel-Chromel or Platinum-Rhodium Thermocouple of 20 or 22 gauge wire. Bend the tip of the couple into an "S" curve. Hook the ingot to be tested, by means of one of the 1/16 inch holes, into the loop of the "S" nearest the long leads of the couple. Bend the welded end of the couple so that it lies near the center of the ingot. Through the hole in the other end of the ingot, pass a 20 gauge Chromel or Platinum wire and tie it securely to itself. Secure the long leads of the thermocouple at the furnace top so that the ingot to be tested hangs at the furnace center. Attach a 300 Gm. weight to the Chromel wire so that the weight hangs freely below the furnace. Close the hole at the top of the furnace with a suitable refractory cover to prevent air currents. The hole at the bottom is covered with an asbestos sheet containing a ¼ inch hole centered with the muffle hole for the loaded wire to pass through. Turn the furnace on and bring it up to within 200°F. of the estimated lower limit of the melting range. Increase the furnace temperature at the rate of 20°F. ± 5° F. per minute. Record as the lower limit of the melting range of the alloy the temperature at which the ingot breaks under the 300 Gm. weight. The value shall be the average of three tests.

Section G. Hardness Test

See A.S.T.M. Designation E10-27, Standard Method of Test for Brinell Hardness of Metallic Materials; A.S.T.M. Standards 1949, Part 2, p. 1009; Coleman, "Physical Properties of Dental Materials," *Bureau of Standards Journal of Research*, vol. I, p. 867, December 1928; and Goodale and Banks, "Development of Brinell Hardness Tests on Thin Sheet Brass," Proc. A.S.T.M. vol. 19, Part 2, p. 757, 1919.

The type of apparatus used to apply the load is optional.

The indenter shall be a 1/16 inch hardened steel ball. The load is applied for 30 seconds.

When testing materials with Brinell numbers less than 50, use a load of 7.5 kg. When the Brinell number is between 50 and 150, use a load of 15 kg. If the Brinell number is over 150, use a load of 30 kg.

APPENDIX

Section I

NOTES ON MAKING SATISFACTORY CASTINGS FOR TENSILE TEST RODS

Skill and attention to detail are required to make excellent and reproducible cast tensile test rods.

1. *Adequate Venting* of the mold is important to results. Artificial vents applied to specific points do not produce the desired results. Proper venting requires freedom for passage of hot gases through the interstices of the investment at all points on the surface of the mold cavity. As short a distance as possible for gas travel, after the hot gas leaves the mold cavity, is conducive to good venting. Free passage of the hot gases through the interstices of the investment is also a function of the character of the investment itself, as well as of the burnout.

   Burnout for too short a time may leave moisture in the interstices of the investment which will interfere with the movement of the hot gases. Burnout at too low a temperature or in a nonoxidizing atmosphere may leave carbon residue from the wax which has infiltrated into the interstices of the investment and so may block these passages. A burnout temperature of 1,250°F. is commonly used where wax is not eliminated by evacuating before burnout. This has been found satisfactory.

2. *Spruing:* Careful spruing is important to results. Under certain circumstances test rods are improved by causing the molten metal to flow some distance through a sprue rod approach before it fills the mold for the test rod. In planning such sprue rod approaches, the following points should be kept in mind:

   a. Sprue rod approaches should be large enough that metal will freeze in the test rod before it does in the sprue rod. Shrinkage porosity is thus avoided.

   b. Sharp turns and other obstructions, which will induce turbulence, should be avoided.

   c. All waxed connection points should be well-flared to avoid sharp constrictions.

3. *Turbulence* of the entering stream of molten metal should be held to a minimum by careful planning of spruing and other means.

4. *A Commercial Dental Investment* shall be chosen for making dental castings from the standpoint of offering free venting to hot gases.

5. *The Water Powder Ratio* used for mixing the investment shall produce a mixed investment of testing consistency (See A.D.A. Tentative Specification No. 2 for Inlay Investment) or thinner.

6. *Vacuum Investing* or hand painting of the pattern with a camel's-hair brush and wetting agent. Either is satisfactory.

7. *Time of Set* before burnout shall be one hour or more.

8. *Relative Temperatures* of the molten gold and the hot mold into which it is to be cast have an important bearing on the excellence of the casting. Such relative temperatures should be studied in connection with each particular alloy.

9. *Centrifugal Casting Machines* are commonly used.

10. *Melting* is generally carried out in a refractory crucible separate from the investment of the mold.

11. *Gold* shall be promptly melted in a reducing atmosphere.

12. *Temperature* of the gold at the time of casting (See Section 8).

13. *The force* with which the metal is thrown into the mold cavity has an important bearing on the results. Proper force to be used requires experimentation. The use of too much

force rather than too little is a mistake commonly made.

14. If a centrifugal casting machine is used, it shall be allowed to spin freely until it stops.
15. The hot mold should not be quenched before the button has lost its heat color.

APPENDIX

Section II

COMPUTING RESULTS

1. *Yield Strength:* The Yield Strength shall be determined for the specific purpose of these specifications according to a modified offset method, as follows:

The illustration shows a Stress-Strain Curve. An explanation of the symbols used to locate the Yield Strength on the Stress-Strain Curve is given below:

O-A. The Stress-Strain Curve. (Section E, Part 5)

$O\text{-}A_1$. A projection of the straight-line portion of O-A.

$B\text{-}B_1$. The Offset Line, located 0.0002 inch per inch to the right and parallel to the straight-line portion of O-A.

P. The point of intersection of the line $B\text{-}B_1$ on the Stress-Strain Curve O-A.

P_1. A point on the curve O-A numerically equal to 105 per cent of Load P.

P_2. A point on the curve O-A numerically equal to 95 per cent of Load P.

$X\text{-}X_1$. A line connecting points $P_1\text{-}P_2$ and intersecting the Stress-Strain Curve produced, O-A, at Y.

Y. The Yield Strength.

Note: In case of an extremely ductile material, the point P_2 may be on the straight-line portion of O-A rather than the curved portion. In such instances, the line $X\text{-}X_1$ shall be drawn between the points $P_1\text{-}P$ until it intersects the Stress-Strain Curve.

2. *Ultimate Tensile Strength:* Divide the maximum load in pounds by the original cross-sectional area of the test piece in square inches. The result is expressed in pounds per square inch.
3. *Modulus of Elasticity* is determined by computing the ratio of unit stress in pounds per square inch to corresponding unit strain in inches per inch as read from the slope of the straight line which best averages the plotted points within the elastic range.
4. *Modulus of Resilience* is determined by calculation as follows:

K = Modulus of Resilience
S_i = Stress at the Yield Strength in pounds per square inch
E = Modulus of Elasticity

$$K = \frac{S_i^2}{2E} \text{ (inch pounds per cubic inch)}$$

5. *Toughness:* For comparative purposes, toughness may be taken as the product of ultimate strength and percentage of elongation. For quantitative results, in case toughness values are to be published, the following equation may be used:

$$\text{Toughness} = {}^{s}u\ (.008\,e + \frac{{}^{s}u}{100{,}000{,}000}),$$

inch lbs. cu. in.

In this equation $({}^{s}u)$ is the ultimate tensile strength and (e) is the percentage of elongation. This equation arbitrarily assumes that the yield strength is about 55 per cent of the ultimate strength and the modulus of elasticity is 15,000,000 psi. Slight variations from these assumptions affect results very little.

6. *Percentage Elongation:* Determine as indicated in A.S.T.M. "Standard E8-46" and as follows:

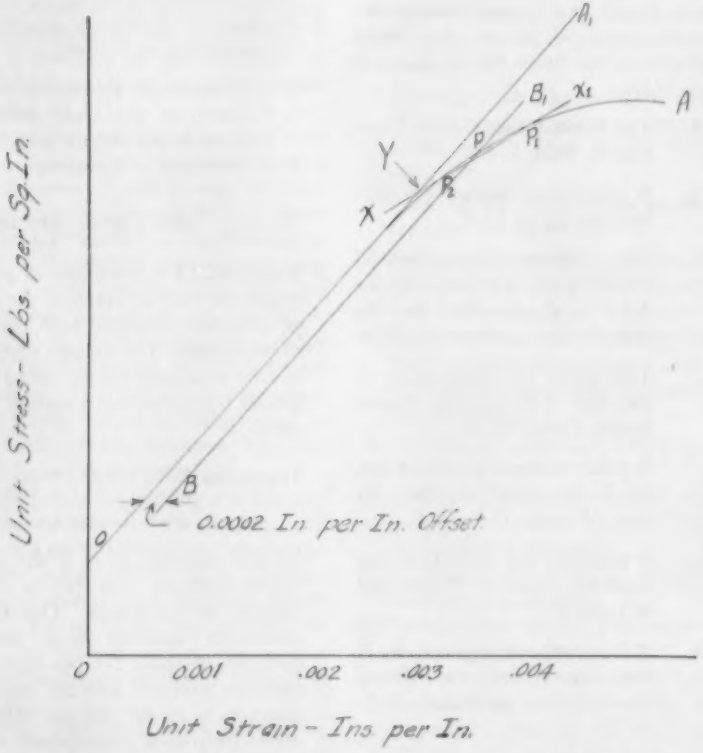
   After the specimen is fractured in the test, the fractured ends are fitted together as closely as possible without forcing them, and the distance between gauge marks is measured in inch units and with such accuracy that the percentage elongation can be expressed to two significant figures or to the nearest 0.5 per cent, when elongations are less than 10 per cent.
7. *Brinell Numbers* shall be reported to the nearest unit up to 100, to the nearest 5 units to 200, to the nearest 10 units above 200.

APPENDIX

Section III

PRACTICAL SIGNIFICANCE OF PHYSICAL PROPERTIES

The user of dental gold alloys is interested in such practicalities as facility of fabricating his structure, the strength of his structure, its lightness and comfort in the mouth, its flexibility under load, and its toughness or ability to withstand shocks and impacts in service without damage or breakage. When properly used, the physical properties of the gold alloy from which a structure is made may furnish him much useful information about these characteristics of his structure.



Determination of yield strength

Complete interpretations of such characteristics involve, in addition to physical properties, the dimensions of the structure, the type and intensities of the loads which are applied to it, and a considerable knowledge of the laws of structural analysis. Such complete interpretations, therefore, are not feasible because much of this auxiliary information is not available to users of dental materials. Interpretations of service characteristics on a comparative basis are, however, entirely practical. When consideration is given to forming a structure from two alternative materials, all pertinent factors are identical except the properties of the material in question; and it becomes accurate to interpret the relative characteristics of structures built from the two materials by comparing the physical properties of the materials of which each is made.

From this standpoint, desirable structural characteristics may be interpreted as follows:

1. *Elastic Strength of the Structure:* Elastic strength of structure may be defined as the biggest load of a given kind which the structure can withstand without suffering permanent distortion after the load is removed. This implies more than one elastic strength for differing types of critical load. For relatively steady loads, elastic strengths of a structure vary directly as the yield strengths of the various materials from which it might be built.

   For loads of a shock or impact nature, elastic strengths vary as moduli of resilience of materials, that is, directly as the square of the yield strengths and inversely as the moduli of elasticity. Elastic shock strength of structure is then more sensitive to variations in yield strength than is strength under steady loads, because in the first case the square of the yield strength is involved as against the first power in the second case.

2. *Inelastic Strength of the Structure:* The inelastic strength of the structure is the load of a given character required to break the structure. Under steady loads, inelastic strengths vary directly as the ultimate strengths of the materials. This comparison, however, becomes somewhat approximate since structural laws do not apply perfectly at breaking loads.

   Under loads of a shock or impact nature, inelastic strength varies directly as the toughness of the material. They may be compared approximately for two structures from different materials by comparing products of percentage of elongation and ultimate strength for each of the materials.

3. *Flexibility of Structure:* Flexibility of structure may be defined as the amount of elastic distortion which the structure undergoes under load. Such distortion will disappear after the load is removed. The spread of a clasp arm, in slipping over an abutment tooth, is an example.

   Flexibility of structure varies directly as the yield strength of material and inversely as the modulus of elasticity. Comparatively, that structure would have the greatest flexibility when the quotient, which is obtained by dividing yield strength by modulus of elasticity, is the greatest.

4. *Rigidity of Structure*—Its Significance: Strictly speaking, elastic rigidity of structure is the inverse of flexibility. Rigidity is directly measured by modulus of elasticity. Under the semi-impact forces of occlusion, the dental structure moves in the mouth. Its movements are checked and counteracted at abutments. If the structure is built of a material of high rigidity (that is, high modulus of elasticity), such forces are checked much more rapidly than when the material is of lower modulus. As a result, the momentary forces

on abutments are much larger and more damaging when the material has high rigidity.

5. *Facility in Fabrication:* Percentage of elongation is a reasonably good measure of the possibility of cold-shaping with the pliers. Resistance to cold-shaping, that is, the difficulty with which the shaping may be carried out, is roughly measured by yield strength.

The upper limit of melting range gives some idea of the minimum temperature necessary to melt the metal for casting. The lower limit of the melting range is a guide in selecting solders for use with the metal and a danger point in respect to incipient melting. This effect is even more damaging than grain growth which may occur at considerably lower temperatures.

Percentage of elongation is a rough guide to possible burnishability, particularly when taken in conjunction with yield strength.

An excessively wide melting range could signify the possibility of coarse grain structure in casting.

These examples serve to illustrate methods by which physical properties are of assistance in interpreting fabrication possibilities.

CHANGES IN STANDARDS AND THEIR SIGNIFICANCE

The test methods set forth in the preceding pages are in some respects similar to those previously published. In other respects, there have been significant changes. It is worth while to point out the more important of these changes for the guidance of the casual reader.

The first of these changes is found in Section C, paragraph 1. Here the term "yield strength" has been substituted for the former "proportional limit." The definition of yield strength given in this paragraph is supplemented and further amplified in paragraph 1, Section II of the Appendix. It will be noticed from the description of the method of computing yield strength that the upper limit of structural usefulness of the material is now related to the concept of a limiting deformation after plastic flow has begun and that the former concept, tied in with proportionality of stress and strain increments, is no longer used. The limiting unit deformation of 0.0002 inch seems small; however, it cannot be as large as that used with many ferrous alloys because of the rather small plastic deformation of many dental gold alloys at stresses close to the yield strength. This revised definition and method of determining yield strength of the material is in line with modern practice in determining the upper limit of structural usefulness for engineering alloys.

The term "toughness" has been added as a significant physical property to be computed from data shown on the stress-strain curve. There is an exact definition of toughness in paragraph 6, Section C. A method for computing toughness is shown in paragraph 5, Section II of the Appendix. A discussion on the structural significance of toughness is included in Section III of the Appendix, along with interpretations of other physical properties.

New definitions for upper limit and lower limit of the melting range have been introduced in paragraph 8 of Section C. Methods of determination for these limits are more completely described in Section F, paragraphs 1a and 1b. There are two reasons for these changes in methods of determining limits of melting range:

First, it was felt that results from the old method of determining the lower limit of melting range by using the in-

verse-rate-cooling curve were not accurately reproducible between different laboratories.

Secondly, it was generally felt by the members of the Committee that the inverse-rate-cooling-curve method of determining melting range was unnecessarily expensive because of the amount of metal involved and the considerable time consumed in the determination.

A great deal of comparative testing was performed by the member laboratories of the Dental Gold Institute in developing alternate methods for determining melting range. Results were carefully compiled and studied not only for their agreement with results obtained from the inverse-rate-cooling curve but also for their reproducibility between laboratories. The new method of determining the upper limit of melting range gives results which coincide closely with those obtained from the inverse-rate-cooling curve. Results for the lower limit melting range as determined by the new method will vary somewhat from those obtained for the same metal from the inverse-rate-cooling curve. It was the experience of the writer in making a number of determinations for the lower limit of the melting range by the new method that these results were somewhat higher than those obtained from the inverse-rate-cooling curve. Other observers from the Committee found a closer correlation between results from these two types of determination for lower limit value.

The definition of the cast test specimen which appears in paragraph 1b of Section E has clarified a point of uncertainty in the old specifications. A test specimen is stated here to be a single test rod, whether or not this rod came from a single or multiple rod casting.

The description in paragraph 2 of Section E of the method of applying a nonaveraging strain gauge to slightly bowed test rods contains a precaution which should improve strain readings in certain cases. According to this method, it is required that the gauge be applied along an element representing the neutral axis of the test specimen when the bending resulting from the straightening action of the axial tensile load takes place.

COMMENT ON THE APPENDIX

Sections I and III and a considerable part of Section II of the three-part Appendix are new. The Committee feels that the added material will be beneficial to users of the specification.

Section I reflects a feeling on the part of Committee members that too often test results on cast test rods are influenced by the skill of the person who makes the casting quite as much as they are by the quality of the metal tested. This is particularly true in regard to ductilities and to a less extent in regard to ultimate strengths. Accordingly, in this section a number of salient points have been included relating to the making of a good tensile test casting, in an effort to eliminate from tensile test results the effect of casting defects.

The material on yield strength in Section II of the Appendix is new and has already been commented on. Yield strength results obtained according to this new method are only a little above the proportional limit as determined by using a 0.0001 inch gauge and are now more nearly reproducible between the various laboratories than the proportional limit determinations. The material on toughness in this section is new.

The fact that paragraph 7 of Section II of the Appendix specifies that Brinell numbers need not be recorded to a nearer value than 5 units for the softer metals and 10 units for the harder metals reflects a recognition of the approximate character of hardness tests.

The Committee recognizes that the physical properties of dental gold alloys have in themselves no value or signifi-

cance to dentistry. They become pertinent only if the constructor of the dental appliance can interpret from them some desirable or significant characteristic of his finished structure. Desirable characteristics in which the dentist is interested are such characteristics as strength of structure, flexibility of structure, toughness and ease of fabrication.

Section III of the Appendix contains interpretations of such characteristics in terms of published physical properties. Since exact mathematical interpretations must of necessity involve the dimensions of the structure as well as characteristics of its material, the interpretations of Section III must of necessity be comparative rather than exact. Nevertheless, the comments made are fundamentally sound as well as readily understandable. It is believed that they will contribute to a better understanding of the relationship between the material of the appliance and its functions as a dental structure.

These tentative standards represent a great amount of cooperative labor and thought on the part of the technical men of the Dental Gold Institute. They reflect also an alert consciousness of their responsibility on the part of the management group of the Institute, which has sponsored this work. It is believed that the use of these standards will insure better materials, more uniformly and understandably presented to the dental profession.

Disorders of the temporomandibular joint

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This article is a report of a study undertaken for the purpose of investigating the somewhat obscure causes of the disorders of the temporomandibular joint, and to ascertain the value of roentgenograms of this region in diagnosis and treatment planning.

The term "arthrosis of the temporomandibular joint" may be defined as a primarily noninflammatory disturbance of the normal function of this joint. Degenerative changes which generally are included under the term "arthrosis" have been omitted purposely from this definition as it was impossible, of course, to carry out an examination of the patients in this series to determine their occurrence. It is the disturbed normal function of the joint that is revealed by clinical examination; and after treatment, it is the rehabilitation of this function as a result of therapy that can be recognized easily.

It is obvious, then, how wide the boundaries are within which these joint disorders lie, and still how little is known of the real causes. There certainly are many factors involved, some of which come within the sphere of medicine rather than that of dentistry. Experience has shown, however, that in a large number of cases, the fundamental causes of the suffering are purely dental in origin.

Presented in the postgraduate course, "Analysis and Treatment of the Stomatognathic System," Chicago, Northwestern University Dental School, April 1-3, 1953.

SELECTION OF CASES

The series discussed herein was comprised of patients treated by the author in his private practice, together with a number of patients referred to him for diagnosis and for suggestions as to treatment.

The fact that these patients were referred to a specialist for attention implies that the degree of severity of the difficulty was considerably greater than that which ordinarily would occur among patients in an average private practice. In this group there was a higher percentage, for example, of cases of deep bite as well as of malocclusions of a more serious nature than generally would be encountered. Disorders of the joint were the reason for the referral of these patients.

The 58 cases in this study were selected out of an initial group of 300 patients for whom a roentgenographic examination had been performed and a bite analysis with casts mounted on adjustable articulators had been made. Of these 300 patients, 83 had symptoms in one or both joints. Since this series covers some 18 years, it was not possible to re-examine and record details for the entire 83; however, the final 58 cases were fully checked.

For the age distributions of the patients, ten year intervals were found most satisfactory. In the table the age distribution of patients is given in ten year periods and also distribution by sex.

TYPES OF TEMPOROMANDIBULAR JOINT

The classification of the joint types was made with the help of roentgenograms of the temporomandibular joint. Two independent appraisals were made, one by myself and one by a specialist in roentgenography. Ordinary visual reading of the roentgenograms was considered sufficient.

For the purposes of this study, the temporomandibular joints were classified as of three types: shallow, normal and deep. The two appraisals agreed, in the majority of cases, within satisfactory limits. In those instances where there was uncertainty as to the group in which the joint should be included, the shallower was chosen and the fact that there was a tendency to the next higher group was indicated.

The distribution according to type of temporomandibular joint for the 58 patients (116 joints) was as follows: shallow, 9; normal, 64; deep 43.

TYPES OF BITE

The various types of bite found in this series of cases were classified as normal; deep; extremely deep; postnormal; extreme postnormal; edge-to-edge; progenic, genuine; progenic, acquired; open bite; abraded. The incisor bite relationship was considered as horizontal or vertical. These relationships were subdivided as follows: in horizontal—normal (0-3 mm.); postnormal (3-6 mm.); extreme postnormal (6 mm.+); in vertical—normal (0-3 mm.); deep (3-6 mm.); extremely deep (6 mm.+).

The term "normal" was applied to those cases where the arch was complete with good articulation, and also to those where the arch was incomplete but where the vertical dimension had not been disturbed and the articulation was good. For both of these groups the incisor bite relationship was "normal" (horizontal, 0-3 mm.; vertical, 0-3 mm.).

The bite types of the 58 patients examined were distributed as follows: normal, 17 cases; deep, 15 cases; extremely

Table • Distribution of patients by age and by sex

Sex groups	Age						Total	Age range
	10-19	20-29	30-39	40-49	50-59	60-69		Min. & max. ages
Male	1	1	3	3	5	–	13	17-57
Female	3	11	9	10	9	3	45	16-68

deep, 6 cases; postnormal, 5 cases; edge-to-edge, 2 cases; progenic, genuine, 1 case; progenic, acquired, 2 cases; open bite, 1 case; total of 48 cases. In ten cases there were insufficient data to permit classification. Certain bites were included in two groups.

CLINICAL SYMPTOMS

A study of the literature on arthrosis of the temporomandibular joint reveals a variation in the occurrence of symptoms. The designation "Costen's syndrome" represents an attempt to provide a comprehensive and thorough listing of all the symptoms. In the present investigation only the symptoms which were recognizable fairly easily were included. Ordinary simple clinical methods such as palpation and auscultation were used for the determination of these symptoms.

Joint Symptoms • The series was divided according to joint symptoms.

Crepitation, crackling and snapping in both joints occurred in 13 cases; in the right joint only in 6 cases; in the left joint only in 24 cases. These manifestations occurred most frequently; however, in only 6 of the 43 cases did such manifestations occur alone. In the rest they were detected in combination with other symptoms. Since it was impossible to confirm with any degree of certainty whether the crepitations and crackling occurred at the beginning or toward the end of the opening movement, no differential diagnosis was attempted.

Pain on opening was noted in 9 cases; pain on chewing in 6 cases. Aching was recorded in 14 cases.

Luxation was present in both condyles in 2 cases; in the right condyle only in none; in the left condyle only in 5 cases. Difficulty in opening the mouth, especially in the morning, was recorded for 30 cases and complete locking of the mandible at a certain position on opening was reported in 9 cases.

Tenderness on the application of pressure over a joint where there was other discomfort was observed in 15 cases. Pain on biting on hard or tough objects was noted in 20 cases, and in 1 case the pain was alleviated by biting on hard or tough objects.

The lower median line was displaced laterally on closing in habitual centric occlusion in 13 cases and displaced laterally on opening from habitual centric occlusion in 15 cases. It was displaced sagittally in 3 cases.

Ear Symptoms • The series was divided according to ear symptoms.

Rustling, ringing, and so forth, was reported in 3 cases. In the American literature this symptom is mentioned as being comparatively common, but as noted, it only occurred in 3 cases in this series.

There was impairment of hearing in 7 cases. In 4 of these cases, the cause of the impaired hearing was diagnosed as severe otosclerosis; in 2 the same diagnosis was made but with less certainty. In these 6 cases, an improvement resulting from dental treatment could not be expected. In the remaining 1 case, the only dental treatment that would be successful was extreme raising of the bite,[1] with forward movement of the mandible carrying the condyles out of their retruded positions in the fossae; the result came up to expectation. Some 25 years of experience of such cases of reduced hearing have taught me that one must exercise great caution when deciding whether or not the disorders are actually due to dental causes and therefore are curable by dental therapy. Careful examination should be made by an ear specialist in order to determine those cases where the cause is other than purely dental in origin. There still will remain a limited number of

1. The expression "bite raising" is used to mean a reconstruction of the bite in question to the correct (physiological) vertical dimension.

cases in which dental treatment reasonably can be expected to yield a positive result; this therapy consists to a large extent of the restoration by one means or another of the physiological vertical dimension.

Other Symptoms • Neuralgic pain and troubles of a more peripheral nature associated with the temporomandibular joint were noted separately.

THERAPY

Bite analyses with study casts mounted on adjustable articulators were made in 36 cases.

Symptomatic heat treatment, such as diathermy, ultra-short wave, heat lamp, and so on, was applied in 17 cases; in 14 of these, heat treatment alone was used.

Spot grinding was used alone in 7 cases; temporary splints were used in 18 cases, 4 of them without subsequent permanent treatment. Permanent reconstruction of the bite was done in 26 cases.

DISCUSSION

The roentgenogram of the temporomandibular joint generally gives a clear indication as to whether a malposition of the mandible occurs when the jaws are brought together in centric occlusion. When such a malposition results from a "gliding obstruction," the roentgenogram is helpful in diagnosis. A careful study of the conditions in the mouth and of the casts in the articulator should, of course, supplement the roentgenographic examination.

Roentgenograms should be taken of the temporomandibular joints with the teeth in habitual centric occlusion and the mandible in the relaxed (physiologic) rest position. If one condyle is more mesially situated than the other when the teeth are in centric occlusion (Fig. 1), the chances are that a gliding obstruction exists and a deviation of the median line of the mandible also can be found.

If it is difficult to fix the correct vertical dimension in a particular case, the roentgenogram provides a reliable guide since the condyle assumes its correct position in the fossa only when the correct physiological vertical dimension exists.

When it is necessary to determine the extent to which the bite should be raised in a reconstruction, the roentgenogram again will be of assistance (Fig. 2).

The roentgenogram will be a valuable guide in ascertaining whether this increase in vertical dimension will be followed by a sagittal displacement of the mandible. This displacement would depend on whether a genuine deep bite is present. Indeed, even at an early stage of the examination, the roentgenogram makes a reliable differential diagnosis of the case possible. This, in turn, can determine the treatment and prognosis.

If a deep bite exists, and the roentgenogram shows that the condyle is in a distal position in the fossa, the bite should be raised just enough to allow the condyles to assume a physiologic and symmetrical position in their fossae (Fig. 3).

For diagnosis of so-called temporomandibular arthroses and for the planning of therapy, the roentgenogram is exceedingly important. In all instances when a disturbance of the opening mechanism is a part of the arthrosis complex, the roentgenographic check of the temporomandibular joints is of outstanding value.

In this discussion, no attention is being paid to such changes in the hard tissues as deformations of the capitulum, the tuberculum articulare, and so on, which of course are depicted clearly. Only those changes of the disk have been considered that are not directly represented in the roentgenogram.

An increase in the normal width of the space between the condyle and fossa indicates an acute or chronic thickening of the cartilage, depending on how long the symptoms in the joint in question have

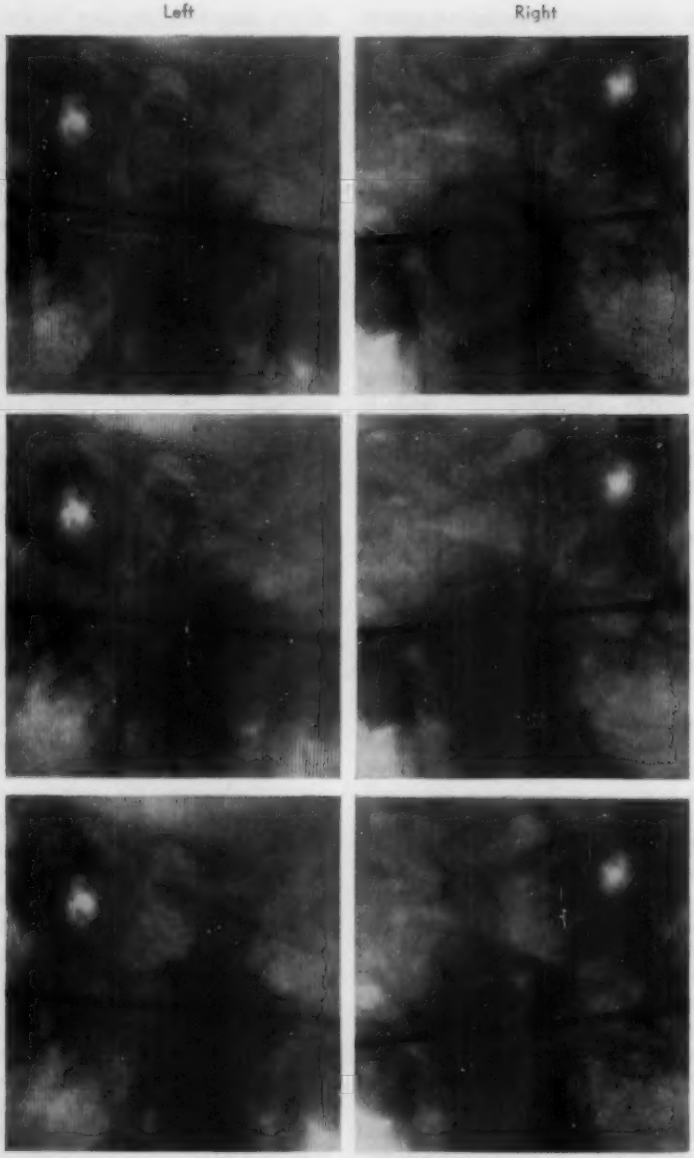

Fig. 1 • Above: Right condyle is in abnormal position downward and forward as compared with normal position of left condyle. Center: When mandible is in rest position, both condyles are uniformly placed in their normal position. Right condyle has moved upward and backward to its normal position. Below: At maximal opening of mouth, condyles are in uniform and correct position

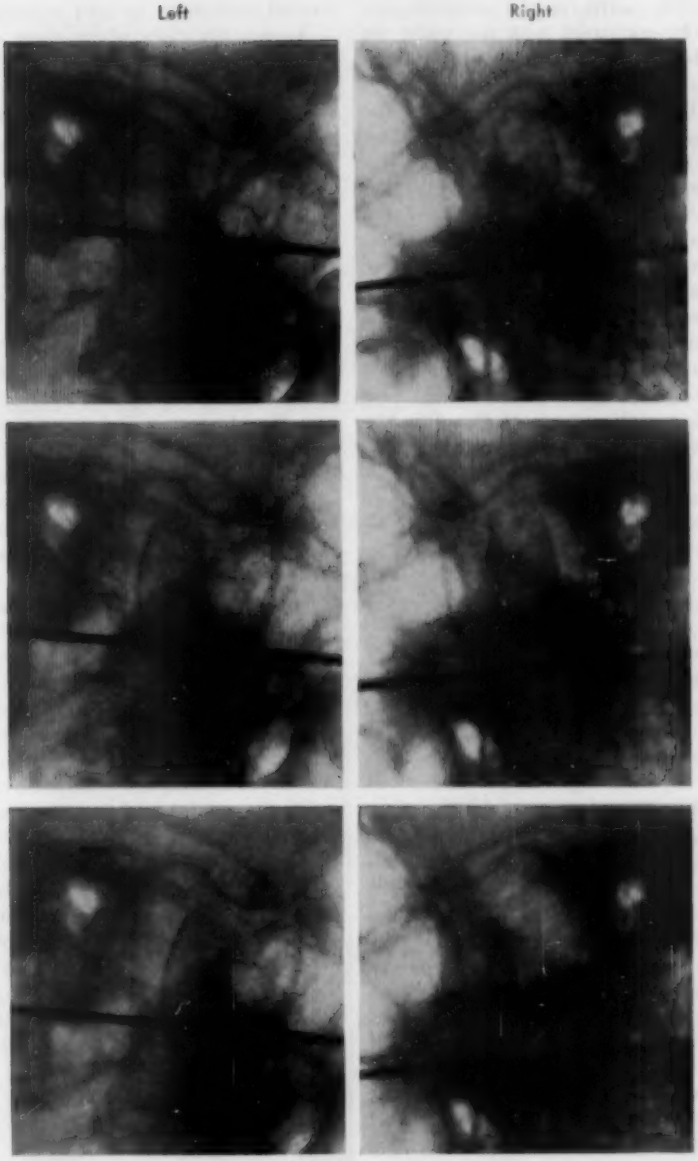

Fig. 2 • Above: Distal position of left and right condyles with mandible in position of habitual centric occlusion in an extreme deep bite. Center: Position of condyles after bite has been raised 8 mm. with temporary splints. Position was retained for the permanent bite reconstruction. Below: Position of condyles when mandible is in open position. Note that right condyle moved more than left. This deviation has since disappeared

lasted. The width in the affected joint should be compared with the width on the other side, if normal, in order to make a diagnosis. A decrease in width might be seen as a compression of the disk due to abnormally heavy loading (often caused by malocclusion). If this overloading is more acute (trauma caused by an accident, for example), the prognosis is relatively good. If, on the other hand, it is more chronic (because of a disturbance in articulation that has persisted over a long period of time) degenerative processes in the disk cartilage may have occurred that will be difficult to correct.

Folding and rupture of the disk are difficult to recognize in a roentgenogram, but because of the restricted mobility of the condyle in question some inferences may be drawn which will be helpful in understanding and planning treatment.

RESULTS

Only such difficulties as could be corrected through dental treatment will be discussed here.

In the series of 58 cases, there were nearly four times as many women as men (45 to 13). The age ranges were 16 to 68 for women and 17 to 57 for the men. The distribution is shown in the table.

Positive results were obtained in all cases where the difficulty had a direct dental origin (40 cases). Among these were the cases where malpositioning of the lower jaw occurred through faulty occlusion; that is, where a deviation of the median line of the lower jaw occurred when the teeth closed in habitual centric occlusion. Lateral displacement of the mandible was far more common than distal displacement (18 cases). This was true not only in this series but also is true among the whole of the author's clientele.

Among these 18 cases, 12 were treated by the insertion of permanent bridges to correct the occlusion. Six cases were treated exclusively by spot grinding.

Among the cases where there was no deviation of the median line, 14 were treated by the insertion of permanent bridges; 1 was supplied with temporary splints. Thirteen cases were treated symptomatically with heat, diathermy, short wave or similar therapy, and as much rest for the joint as was possible (easily masticated food with liquids for the first days). The patients were cautioned against opening their mouths wide or biting heavily.

In 7 of these cases deviation of the median line did not occur when the teeth were brought together in centric occlusion. Treatment yielded a positive result in all cases. Occlusal trauma was found in one case and a mandible which had been fractured in an accident was found in another. In the remaining cases, the trouble could be attributed to the disk. In the remaining 6 cases in this group, a deviation of the lower jaw was associated with the opening movement. Heat treatment gave a positive result in 2 of these instances and an obvious improvement in 2. There were no observable results in the last two cases. In these it was clear that general disorders of the joints and severe neuralgia existed.

Of the total of 50 cases where disorders of the temporomandibular joints were treated, 42 responded with completely satisfactory results, which indicated that the difficulties were dental in origin. In 4 cases, dental therapy resulted in an obvious improvement. In 4 cases, the clinical picture indicated that the difficulties resulted from other causes, so attempts at dental therapy yielded no result.

CONCLUSIONS

If bite analysis and roentgenograms indicate that the arthrosis of the temporomandibular joint is caused by incorrect cuspal guidance of the mandible, either laterally or sagittally, and these condi-

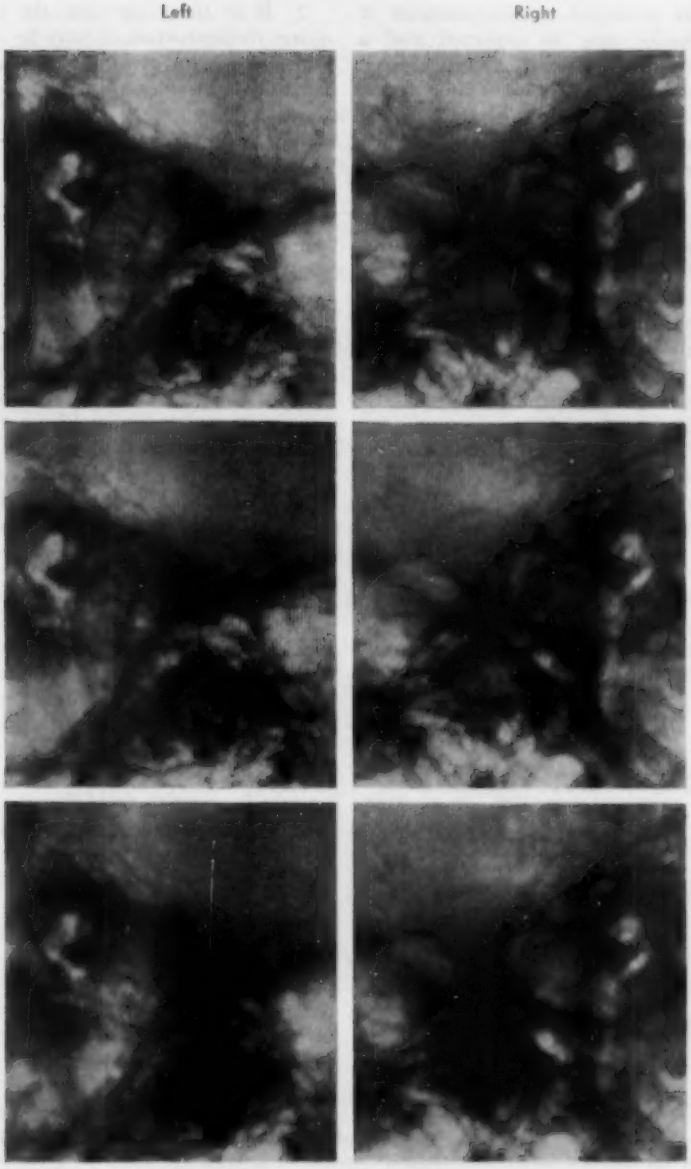

Fig. 3 • Above: Position of left and right condyles with teeth in occlusion in an extreme deep bite. Center: Position of condyles after bite has been raised 9 mm. with temporary splints. Below: Position of condyles when mandible is in open position (2 cm.)

tions are corrected, a disappearance of the disorder may be expected and a permanent cure realized.

In those cases where no definite dental origin can be established but where neuralgic symptoms are dominant, no improvement can be expected from dental therapy. Symptomatic heat treatment and rest may yield satisfactory results in such cases, although a radical neurosurgical approach may be required for certain cases if the patient is to be relieved of what frequently is severe pain.

For those cases where a dental origin can be established with certainty, three possible modes of treatment should be considered:

1. The mandible may be returned to its correct central position by spot grinding—existing obstructions to gliding are removed and smooth articulation is obtained.

2. If at the same time the bite requires reconstruction, it may be effected with permanent prosthetic appliances—fixed or removable—or a combination of the two types.

Both these alternatives can be expected to yield lasting results.

3. The third possibility is to bring the mandible into the correct position by the use of temporary splints alone, and to retain it in place until such time as the symptoms have disappeared. So far as the third method of treatment is concerned, I am unable to pronounce judgment since, as pointed out earlier, because of the selective nature of the series of cases, such treatment was resorted to only in exceptional cases. Furthermore, it was only applied in cases where it was uncertain from the beginning whether dental therapy had any chance of success.

Sturegatan 32

Science and Sociology • Factual, that is, scientific education on the nature of man seems necessary for the best future of man. Such education includes the scientific evidence of the unity of the human race. Despite so-called racial differences in such minor details as skin color, language, and religions, science has proved that the people now living on our earth are one species. This fact, understood and accepted by all sane citizens, should gradually eliminate racial prejudice, fear, and hate. It should promote cooperation in place of violence. Basic to the achievement of freedom from fear, want, and violence is the freedom to know. *Anton J. Carlson, Science, 117:701, 1953.*

Effects of air-borne fluorides on children living on Sauvie Island

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Preliminary studies, the results of which were published during 1949[1] and 1950[2] by the Oregon Agricultural Experiment Station of Oregon State College, showed that high concentrations of fluorides were present in the plants grown on Sauvie Island, Oregon. Furthermore, atmospheric contamination by fluorine, as indicated by the buckwheat method, was general over Sauvie Island and most pronounced along the eastern shore. The presence of fluorides was attributed to aluminum reduction plants in the vicinity, especially the plant at Vancouver, Wash., across the Columbia River from Sauvie Island. The question arose as to whether the children living on the island might be assimilating a high concentration of fluorides into their systems either through inhalation of fluoride-contaminated atmosphere or through ingested food and water.

The purpose of this study was to determine whether certain oral and physical characteristics, particularly the dental characteristics, of the children living on Sauvie Island revealed any evidence of effects—beneficial or harmful—which could be attributed to the inhalation and ingestion of fluorides.

REVIEW OF LITERATURE

The abundant literature on the subject of fluorosis in human beings and animals shows that the subject is of vital and current interest. Extensive investigations on the toxic and metabolic effects of fluorine-containing compounds have been carried out in the last few decades.[3-7] Greenwood[8] in his review of the literature on fluoride intoxication up to 1940 emphasized chronic intoxication.

Histologic changes in the enamel and dentin of the rat incisor in acute and chronic experimental fluorosis were studied by Schour and Smith.[9] Schour and

This preliminary investigation was financed by the section of maternal and child care, Oregon State Board of Health, and the Oregon State Board of Dental Examiners.

University of Oregon Dental School.

1. Preliminary results of fluorine investigation involving dairy cattle and certain vegetative plants in Multnomah and Columbia Counties, Oregon. (Typescript.) Agricultural Experiment Station, Oregon State College, Corvallis, Oregon, 1949.

2. Chapman, M. P. Fluorosis symptoms in cattle, Multnomah and Columbia Counties, Oregon. (Typescript.) Agricultural Experiment Station, Oregon State College, Progress report, 1949-50.

3. Roholm, Kaj. Fluorine intoxication. A clinical hygienic study. London, H. K. Lewis & Co., Ltd., 1937.

4. Bishop, P. A. Bone changes in chronic fluorine intoxication. Am. J. Roentgenol. 35:577 May 1936.

5. Hodges, P. C., and others. Skeletal sclerosis in chronic sodium fluoride poisoning. J.A.M.A. 117:1938 Dec. 6, 1941.

6. Jovanovits, J. A contribution to experimental fluorosis as it affects bone. Bull. Hyg. 21:182 March 1946.

7. Kemp, F. H. Fluorine in human nutrition. III. Radiological investigations. Nutrit. Proc. Soc. 1:210, 1944.

8. Greenwood, D. A. Fluoride intoxication. Physiol. Rev. 20:582 Oct. 1940.

9. Schour, I., and Smith, M. C. The histologic changes in the enamel and dentin of the rat incisor in acute and chronic experimental fluorosis. Univ. Arizona Agric. Exper. Stat., Tech. Bull. no. 52, p. 69-91. June 15, 1934.

Poncher[10] studied the effects of injections of small doses of sodium fluoride on the growing teeth of a hydrocephalic infant. They found that gross observations made at the autopsy and microscopic study of the tissues disclosed no evidence of any toxic action of sodium fluoride except in the dental tissues.

Machle, Scott and Largent[11] observed that under normal dietary conditions, over 80 per cent of the soluble fluoride in the ingesta is absorbed and that all this absorbed fluoride is lost by way of urinary excretion. Machle, Scott and Treon[12] state that "the fluorine content of the urine of subjects living in an area where mottled enamel is endemic and the fluorine content of the drinking water is high, greatly exceeds that found in localities not so affected" and that food plays a small role in the production of mottled enamel.

The presence of fluorine in the urine is considered an indication of recent or present utilization of fluorides[12-16] but does not prove that metabolic or toxic changes have been brought about in the tissues. Recently McClure[15,17] reported on the amounts of fluoride available in different foods and discussed the metabolism of fluorine. In 1948 Shourie[18] showed a relationship between calcium and fluorine in acute and chronic toxicosis and dental caries in hamsters and rats. Pandit and others[19] studied the production of mottled enamel in children. Larner[20] reviewed the literature on the toxic and metabolic effects of fluorine-containing compounds in 1950.

A well documented and detailed investigation on industrial fluorosis and its hazards to man and animals was reported recently by Agate and others.[21] They state:

> On account of the configuration of the country, the direction of the prevailing winds, and the heavy rainfall, fluorine compounds in the atmosphere tend to be deposited. The extent of the area affected may, of course, vary in time with changing circumstances.

They recommended that "it is only prudent to site new developments in such a way that, so far as possible, residents are kept out of the zone known to be liable to contamination."

PERTINENT FACTS ABOUT SAUVIE ISLAND

Description of the Island • Sauvie Island (Fig. 1) is about 17 miles long and 4½ to 5 miles wide. On the east it is bounded by the Columbia and Willamette Rivers; on the west it is separated from the mainland by Multnomah Channel. The island is devoted entirely to agriculture, chiefly, dairy farming and the raising of forage crops. Some beef cattle are raised and also horses, turkeys and a few sheep.

Fluoride Content of Air • The nearest aluminum plant is located in Vancouver, across the Columbia River about one mile southeast from the island. The plant has been in operation almost continu-

10. Schour, I., and Poncher, H. G. Rate of apposition of enamel and dentin, measured by the effect of acute fluorosis. Am. J. Dis. Child. 54:757 Oct. 1937.

11. Machle, W.; Scott, E. W., and Largent, E. J. The absorption and excretion of fluorides; the normal fluoride balance. J. Indust. Hyg. & Toxicol. 24:199 Sept. 1942.

12. Machle, W.; Scott, E. W., and Treon, J. Normal urinary fluorine excretion and the fluorine content of food and water. Am. J. Hyg. 29:139 May 1939.

13. Largent, E. J., and Ferneau, I. F. Exposure to fluorine in magnesium foundry. J. Indust. Hyg. & Toxicol. 26:113 April 1944.

14. McClure, F. J. Dental caries and fluorine. Washington, D. C., American Association for the Advancement of Science, 1946, p. 78.

15. McClure, F. J. Fluorine in foods; survey of recent data. Pub. Health Rep. 64:1061 Aug. 26, 1949.

16. Collings, G. H.; Fleming R. B. L., and May, R. Absorption and excretion of inhaled fluorides. A.M.A. Arch. Indust. Hyg. 4:585 Dec. 1951.

17. McClure, F. J. Mineral metabolism (fluorine and other trace elements). Ann. Rev. Biochem. 18:335, 1949.

18. Shourie, K. L. Calcium: fluorine ratio and acute and chronic fluorine toxicosis and dental caries in hamsters and rats. (Abst.) J. D. Res. 27:732 Dec. 1948.

19. Pandit, C. G., and others. Endemic fluorosis in South India. A study of the factors involved in the production of mottled enamel in children and severe bone manifestations in adults. Indian J. M. Research 28:553 Oct. 1940.

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21. Agate, J. N., and others. Industrial fluorosis, a study of the hazard to man and animals near Fort William, Scotland. Medical Research Council Memorandum no. 22, London, 1949.

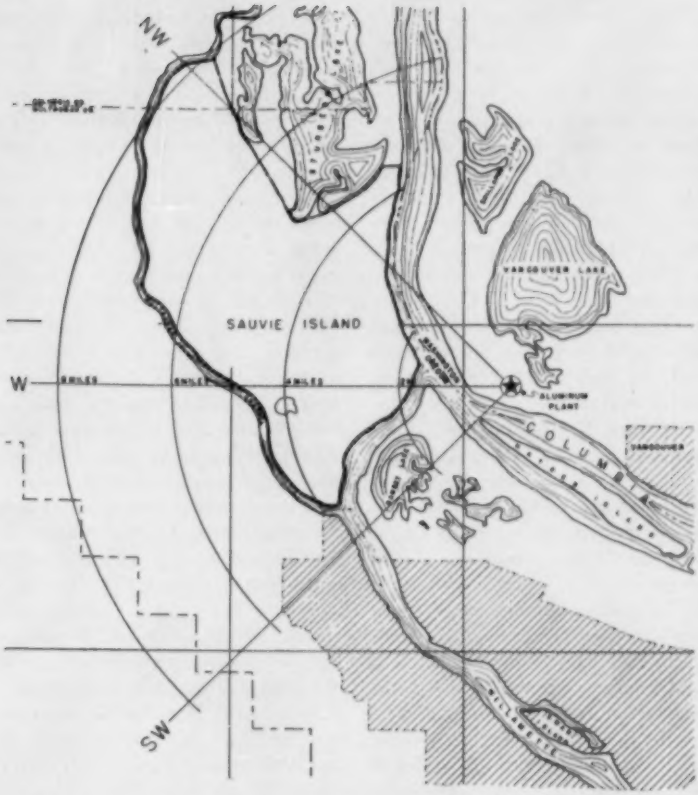

Fig. 1 • Sauvie Island, located at junction of Columbia and Willamette Rivers. Note position of aluminum plant southeast of island

ously since May 26, 1941. The gases escaping into the atmosphere from the plant contain fluorine, present as hydrogen fluoride, which is reactive and soon changes into more stable compounds. Up to 1945, the fluorides escaping into the atmosphere since the plant went into full production averaged 7,000 pounds per day. After a monitor spray system was installed in 1945, the amount was reduced to 3,600 pounds per day. The installation of a second spray system in 1949 further reduced the amount of fluorides escaping into the atmosphere to 1,100 pounds.[22]

The wind direction from the plant to the island is from southeast toward northwest, that is, between from 113 degrees to 157 degrees to from 293 degrees to 337 degrees. From April 1 to October 31 the wind direction is from the plant to Sauvie Island 13.6 per cent of the time and during the period from November 1 to March 31 30.9 per cent of the time.[22]

Fluoride Content of Food and Water • Studies of fluorosis in the cattle and vege-

22. Fraser vs. Alcoa Suit, U. S. District Court West District of Southern Post, Washington State pre-trial order P-5, civil ao. 1223.

tation of the island and an analysis of fluorides in certain food plants have already been reported.[23] For this investigation information concerning the consumption of home-grown vegetables was secured from the housewives and recorded on a questionnaire by a trained interviewer. Special care was taken to determine the amount of locally grown leafy vegetables and locally produced beef, pork or fowl consumed by the family throughout the year.

As shown in Table 1, 128 persons used locally produced beef and other meats almost all the time, 160 persons used fresh and frozen locally grown vegetables all the time, 124 persons used their own canned vegetables. All children attended the grade school on the island. The only meal not eaten at home was lunch. Food used in the preparation of the school lunch was procured chiefly from the locality.

All the people questioned were using water from their own wells, and not from exposed surface reservoirs. Chemical analyses of fluorides present in the water from selected wells had been made by the State Board of Health; these tests showed that extremely small quantities of fluorides—less than 0.1 ppm—were present in the samples.[24]

CONDUCT OF INVESTIGATION

Subjects • Sixty-eight children, 98 per cent of the child population between 3 and 18 years of age, were examined. The data for the resident children were recorded separately from the data for transient children, that is, children of families of transient workers who had moved to Sauvie Island during the last three years. Children who had lived on Sauvie Island for more than three years were considered residents.

Methods • Teams consisting of trained dental workers and their assistants conducted the oral examinations of the children, obtained their physical records and secured intraoral and long-bone roentgenograms. Some teeth, which had calcified during the period of the greatest amount of fluoride into the air, were obtained for histological study.

Oral Examination • Since a growing tooth is the first and the most delicate organ to react to the ingestion of fluorides,[10] a detailed oral examination was carried out under good artificial light with an Ash no. 6 mouth mirror, a no. 14 explorer and compressed air. The subjects were seated in an ordinary chair to which a portable headrest had been attached. One dentist, trained as an examiner, conducted the oral examinations; and another dentist recorded the amount of dental decay, the restorations, hypoplastic defects, the presence of mottled enamel or opaque spots and inflammation of the gingivae or oral mucosa.

Dental Roentgenograms • Two rooms were equipped each with a General Electric dental x-ray unit and a dental chair. Full mouth intraoral roentgenograms, usually 10 to 14 for each child, were secured by trained dental x-ray technicians, who used the short-cone technic.

General Roentgenograms • Roentgenograms of the left wrist and hand, elbow and knee were obtained with a portable x-ray unit mounted on a stand. The tube-film distance was 30 inches. The time of exposure was determined after preliminary tests and varied with the age and the part of the body exposed.

Height and Weight • A registered nurse recorded the height and weight of each child. The technic used for obtaining height as well as weight was that outlined by Meredith.[25]

23. Todd, W. R. Personal communication.
24. Oregon State Board of Health. Personal communication.

Table 1. Percentages of home-raised vegetables and meats consumed by 189 Sauvie Island residents

	Own beef-stock, pork and poultry	Own vegetables, fresh and frozen	Own vegetables, canned
Residents consuming none	61	28	65
Residents consuming			
1–25%	8	0	10
26–75%	34	20	31
76–100%	86	140	83
1–100%	128	160	124

ANALYSIS OF RESULTS

Age and Sex Distribution of Children • There were 54 resident children, 25 females and 29 males, from 3 to 19 years of age. The data for the transient children, 9 boys and 5 girls, were analyzed and compared with the data of the resident children. No essential differences were found between the two groups in caries incidence, calcification of teeth, physique or interpretation of the intraoral and long-bone roentgenograms. The transient children were used as a control group; for the sake of brevity, the data for the transient children are not included.

Results of Oral Examination • None of the resident or transient children had mottled teeth. White opaque spots, which might have indicated a very mild degree of mottling, were observed on the upper incisor teeth of three resident children. The teeth of three children had brown stains, which were not due to mottling. Hypoplastic defects—horizontal pits or lines—were observed in the teeth of one child. The enamel of five anterior teeth was chipped; four incisors were fractured. There was a vertical crack on an incisor of one child and a horizontal crack on an incisor of another.

Since the total number of children available for this investigation was small and since the difference between males and females is consistent but slight,[26] the data for all the children were combined.

The def rate per child was highest at age seven. Though the def rates of children 1 to 6 were similar to those of the Portland nursery children,[27] no definite conclusions can be drawn, since the rates varied widely and the sample was small (Table 2).

The DMF rates of the Sauvie Island children and the Hagerstown children[28] were alike in rate of increase with age (Fig. 2), but the caries rates for the Sauvie Island children were consistently higher. The DMF rate per Sauvie Island child at 6 years of age was 2 and at 11 years 6.7 in comparison with less than 0.5 per Hagerstown child at 6 years of age and less than 3.0 at 11 years. An analysis of DMF tooth surfaces produced similar comparisons.

25. Meredith, H. V. Size and form of boys of U. S. A.—north European ancestry born and reared in Oregon. Growth 15:39 March 1951.

26. Klein, H., and others. Dental caries. Philadelphia, University of Pennsylvania Press, 1941.

27. Savara, B. S., and Suher, Theodore. Incidence of dental caries in children one to six years of age. (Abst.) J. D. Res. 31:480 Aug. 1952.

28. Knutson, John W.; Klein, Henry, and Palmer, Carroll E. Dental needs of grade school children of Hagerstown, Md. J.A.D.A. 27:579 April 1940.

Table 2. Dental caries experience of 54 Sauvie Island children aged 3 to 19 years

	Age																
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Number of children	3	4	0	2	5	3	3	4	5	7	4	2	5	1	2	3	1
Average def teeth	1.0	4.5	—	3.0	5.6	5.0	4.7	2.5	.6	—	—	—	—	—	—	—	—
Average DMF teeth	—	—	—	2.0	3.8	5.0	5.7	4.8	6.7	9.4	15.8	8.5	8.8	3.0	7.5	14.3	1.0

Intraoral Roentgenograms • The intraoral roentgenograms were examined for evidence of resorption of the deciduous teeth, calcification and eruption of the permanent teeth and pathological conditions related to calcification or morphological structure of the teeth and the alveolar bone. No significant variations from usual conditions were apparent in the amount of secondary dentin deposited, presence of pulp stones, hypercementosis, appearance of the lamina dura, alteration in the number or size of trabeculae or resorption of the roots or the alveolar crest. The resorption of deciduous teeth and the calcification and eruption of permanent teeth varied slightly in time of occurrence from the chronological patterns described by Schour and Massler.[29]

Calcification was normal for 53.7 per cent of the Sauvie Island children, advanced for 33 per cent and retarded for 13 per cent (Table 3). Resorption of the deciduous teeth occurred within the range of normalcy for 74 per cent of the children, was advanced for 16.7 per cent and retarded for 9.3 per cent. Eruption of the teeth was within the normal range for 70 per cent of the children, advanced for 22 per cent and retarded for 7.4 per cent.

Table 3. Analysis of resorption, calcification and eruption of permanent teeth of 54 Sauvie Island children

	Normal		Advanced		Slow	
	No.	Per cent	No.	Per cent	No.	Per cent
Calcification	29	53.7	18	33.3	7	13.0
Resorption	40	74.0	9	16.7	5	9.3
Eruption	38	70.4	12	22.2	4	7.4

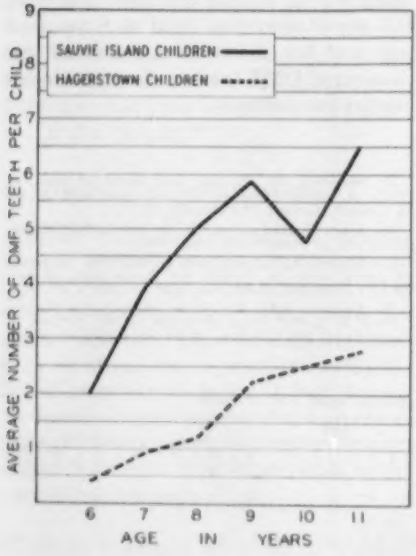

Fig. 2 • DMF teeth of Sauvie Island and Hagerstown children

Roentgenograms of Wrist, Hand, Elbow and Knee • Two roentgenologists, working independently, examined the roentgenograms of the wrist and hand, elbow and knee for each child and were unable to demonstrate any typical bone changes that could be attributed to fluorine intoxication. They considered it possible, however, that there might be some early, minimal changes which could not be detected roentgenographically.

Histopathological Findings • Ground sections from some teeth which had calcified during the period of the escape of the greatest amount of fluorides into the air were examined and revealed no evidence of abnormal calcification.

Physical Characteristics of Children • The height, weight and age of the children were plotted on Meredith's physical growth forms;[30] it was determined that 5 were tall, 9 moderately tall, 18 average, 15 moderately short and 7 short; 11 were heavy, 10 moderately heavy, 22

29. Schour, Isaac, and Massler, Maury. Development of human dentition. J.A.D.A. 28:1153 July 1941.

30. Meredith, H. V. Physical growth records for boys and girls. Chicago, American Medical Association.

Table 4. Height and weight of 54 resident children, plotted on Meredith's Physical Growth Record

	Height					Weight				
	Tall zone	Mod. tall zone	Av. zone	Mod. short zone	Short zone	Heavy zone	Mod. heavy zone	Av. zone	Mod. light zone	Light zone
Number of children	5	9	18	15	7	11	10	22	10	1

average, 10 moderately light and 1 light (Table 4).

According to Wetzel's grid system,[31] 28 of the children were of good physique, 22 were stocky, and only 4 were of poor physique.

Both according to Meredith's record forms and according to Wetzel's grids, a large number of the children were heavy in weight in comparison with their age.

DISCUSSION AND SUMMARY

Investigators[1] had reported that buckwheat plants and flowers grown in certain parts of Sauvie Island in Oregon were being damaged by excessive quantities of fluorides. Preliminary observations made in the present study indicated that the majority of the people living on the island were constantly consuming locally raised vegetables and locally produced meat. McClure, in 1943,[32] had suggested that the direct addition of a fluoride supplement to children's diets during the formative life of the teeth reduces incidence of dental decay. There were, therefore, three criteria of the effects and thus indirectly of the presence of fluorides in the systems of the children: (1) a reduction in the incidence of dental caries, (2) the presence of mottled teeth and (3) bone changes.

Visual examination of the teeth of the Sauvie Island children revealed no evidence of mottling. Ratios of dental caries were extremely high in comparison with those for Hagerstown children but compared favorably with those for Oregon children reported by Hadjimarkos.[33] These results indicate that the daily intake of fluorides of the children was so low that it did not cause mottling of the teeth nor alter the incidence of dental caries.

Further evidence provided by intraoral roentgenograms showed slightly accelerated calcification and eruption of the permanent teeth. Histological examination of a number of teeth revealed no defects in the calcification of the enamel.

According to the plotting of their weights on Meredith's chart and Wetzel's grid, the children were somewhat above average in weight. Meredith in 1951[24] had found that children born and reared in Oregon are heavier, taller and larger in body measurements than children in many other parts of the United States. It is possible that the slight acceleration in calcification and eruption may have been due to healthier surroundings. Roentgenograms of the long bones did not reveal any alteration in calcification.

The findings and observations of this study indicate, therefore, that the children of Sauvie Island showed no symptoms—determinable by the methods used—of having consumed excessive fluorides in the past few years, nothwithstanding the fact that the presence of fluorides in the atmosphere is alleged to have caused damage to the cattle and vegetation.

31. Wetzel, N. C. Physical fitness in terms of physique, development and basal metabolism. J.A.M.A. 116:1187 March 22, 1941.

32. McClure, F. J. Ingestion of fluorine and dental caries. Am. J. Dis. Child 66:362 Oct. 1943.

33. Hadjimarkos, D. M., and Storvick, C. A. Geographic variations of dental caries in Oregon; dental caries among school children in the Willamette Valley region. Am. J. Pub. Health 41:1052 Sept. 1951.

Surgical correction of mandibular prognathism by sub-sigmoid notch ostectomy with sliding condylotomy: a new technic

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The object of this paper is to present a new surgical procedure for the reconstruction of the prognathic mandible.

The term prognathism is derived from the Greek, "pro"—in front of, and "gnathos"—jaw. This term has been used for over a century by anthropologists for the normal racial characteristic of normally occluding jaws, projecting in front of the cranium.[1] This paper deals with a new surgical technic for the correction of a pathologic condition and not a racial characteristic. The first surgeon to correct this deformity was Hullihen[2] in 1849. He used the term "elongation of the under jaw." At the turn of the century authors generally used the term "prognathism" for the racial characteristic and "mandibular protrusion"[3] for the pathologic entity. A survey shows that about 37 per cent of authors use the term "prognathism," and another 30 per cent use "mandibular prognathism." The remaining 33 per cent have used combinations of, "protrusion of,"[4-9] "protruding,"[10] "protruded,"[11] "prognathic,"[11,12] or "hyperplasia,"[13] with the words, "jaw, lower jaw, or mandible." The terms "protrusion"[5] and "protraction"[14] are qualified by "mandibular" or "abnormal mandibular." Other terms used are "prognathic deformity,"[15] "congenital prognathism,"[16,17] "progenia,"[18] "macromandibular deformity,"[19] "Class III malocclusion,"[20] "mesioclusion"[21] and "macrognathia."[22]

The etiology in a particular case of mandibular prognathism usually is doubtful. In general there are three causes:

1. Perverted growth pattern of the mandible. Weinmann and Sicher[23] have shown that the main growth center is the

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1. Fisher, A. K. Some observations on the use of the term prognathism. J.A.D.A. 38:611 May 1949.

2. Hullihen, S. P. Case of elongation of the under jaw and distortion of the face and neck, caused by a burn, successfully treated. Am. J. D. Sc. (first series) 9:157 Jan. 1849.

3. Blair, V. P. Operations on the jaw-bone and face. Surg., Gynec. & Obst. 4:67 Jan. 1907.

4. Blair, V. P. Instances of operative correction of malrelation of the jaws. Internat. J. Orthodont. 1:395 Aug. 1915.

5. Gilmer, T. L. Resection of the bone for protrusion of the mandible. Surg., Gynec. & Obst. 20:735, 1915.

6. Gunnell, J. S. A remedy for the protrusion of the lower jaw. Am. J. D. Sc. (first series) 3:65, 1842-1843.

7. Moose, S. M. Correction of abnormal mandibular protrusion by intra-oral operation. J. Oral Surg. 3:304 Oct. 1945.

8. Traynham, W. H., Jr. Bilateral osteotomy of the rami for marked protrusion of the lower jaw: report of case. J.A.D.A. 31:1025 Aug. 1944.

9. Weiss, B.; Lentz, M. J., and Newman, Julius. Correction of severe mandibular protrusion by osteotomy of the rami and orthodontics. Am. J. Orthodont. & Oral Surg. (Oral Surg. Sect.) 27:1 Jan. 1941.

10. Whipple, J. W. Double resection of the inferior maxilla for protruding lower jaw. D. Cosmos 40:552 July 1898.

hyaline cartilage in the condyle. The condyle grows upward and backward. This results in a downward and forward movement of the mandible. As the length of the masseter and internal pterygoid muscles remains constant, the downward and forward growth results in an obtuse mandibular angle. In 56 of our 57 patients, and also in 15 cases reported by Dingman,[24] the patients had an abnormal gonial angle and not a disproportion between the maxillary and mandibular arches of teeth. This has been reported also by Harsha,[25] Hemley,[21] Pettit[26] and Waldron.[27] Such an abnormal growth pattern may be a congenital disturbance or result from acromegalia.

2. Tumors of the condyle.[15]

3. Chronic anterior dislocations of the temporomandibular joints.

The cases are further classified as to degree, symmetry and associated open bite, if any exists.

Aller[28] stated in 1917:

> Protrusion of the lower jaw, when excessive, is one of the most repulsive and conspicuous deformities of the face; and even though the patient be brilliant, pleasant and peaceful, he will always be judged from his appearance as sordid, morose and vicious.

The psychic disturbances associated with mandibular prognathism should not be underestimated. Often the patient will state voluntarily how the deformity has marred his happiness and interfered with normal employment and social success. The functional disabilities are obvious; such disabilities as interferences with proper mastication and speech. In most cases of mandibular prognathism, with or without open bite, the functional disabilities are compensated for partially by the tongue. The tongue enlarges with the lower jaw and it takes on some of the functions of the mandible in speech and mastication. A thorough examination should be made, using every aid that is available, including roentgenograms with cephalometric measurements, laboratory tests, photography, face masks and carefully articulated models of the dental arches. The surgical articulator described by Waldron[27] and double focal point roentgenography probably would be of value in the predetermination of the treatment plan.

CURRENT SURGICAL TECHNICS

A great many surgical technics are described in the literature. Most of them that are for the correction of mandibular prognathism can be classified as follows:

11. Newman, J. Repair of prognathic and retruded jaws. Am. J. Surg. 58:35 Oct. 1942.

12. Henry, C. B. Kostecka's osteotomy for the correction of the prognathous mandible. Proc. Roy. Soc. Med., Odont. 41:688 Oct. 1948.

13. Brown, J. B., and others. Facial asymmetry and malocclusion from hyperplasia of the mandible; correction by operation. Plast. & Reconstruct. Surg. 1:284 Nov. 1946.

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15. Worman, H. G.; Waldron, C. W., and Radusch, D. F. Osteoma of the mandibular condyle with deviation prognathic deformity: report of case. J. Oral Surg. 4:27 Jan. 1946.

16. Pettinari, V. Congenital prognathism: its surgical treatment. J. Internat. Coll. Surgeons 14:500 Nov. 1950.

17. Thompson, E. C.; Burch, R. J., and Berkson, Ralph. Bilateral mandibular ostectomy for correction of congenital prognathism. Illinois D. J. 19:277 July 1950.

18. Pichler, Hans. Double re-section of the mandible in a case of very marked progenia. (Abst.) Brit. D. J. 41:463 May 15, 1920.

19. Willett, R. C. Surgical-orthodontic correction of a macromandibular deformity: report of case. First International Orthodontic Congress. St. Louis, C. V. Mosby Co., 1927, p. 458.

20. Hellman, Milo. Morphology of the face, jaws and dentition in Class Three malocclusion of the teeth. J.A.D.A. 18:2150 Nov. 1931.

21. Hemley, Samuel. The surgical correction of mesioclusion. Am. J. Orthodont. & Oral Surg. (Oral Surg. Sect.) 30:241 May 1944.

22. Brandon, S. A. Bilateral osteotomy of the mandible for the correction of macrognathia. Oral Surg., Oral Med. & Oral Path. 2:832 July 1949.

23. Weinmann, J. P., and Sicher, Harry. Bone and bones. St. Louis, C. V. Mosby Co., 1947.

24. Dingman, R. O. Osteotomy for correction of mandibular malrelation of developmental origin. J. Oral Surg. 2:239 July 1944.

25. Harsha, W. M. Prognathism with operative treatment. J.A.M.A. 59:2035 Dec. 7, 1912.

26. Pettit, J. A., and Walrath, C. H. Prognathism and its surgical correction by a new procedure. J.A.D.A. 21:125 Jan. 1934.

27. Waldron, C. W.; Peterson, R. G., and Waldron, C. A. Surgical treatment of mandibular prognathism. J. Oral Surg. 4:61 Jan. 1946.

28. Aller, T. G. Operative treatment of prognathism. D. Cosmos 59:394 April 1917.

29. González-Ulloa, Mario. Some important details in the treatment of prognathism by double condylectomy. Plast. & Reconstruct. Surg. 9:391 May 1952.

1. Ostectomy
   A. Intraoral: (body)[2-4, 10, 27, 30-33]
   B. Extraoral: (condyle;[14, 29, 34-38] gonial angle;[25, 39] body)[24, 25, 40-44]
   C. Combination intraoral and extraoral approaches.[24, 25, 45-48]
2. Osteotomy
   A. Closed operation: (ramus;[14, 24, 27, 49-52] condyle;[12, 53-57] gonial angle)[58-60]
   B. Open operation: (intraoral, of the ramus;[7, 61, 62] extraoral, of the ramus;[14, 24, 27, 49, 63-65] of the condyle).[26, 66, 67]
3. Sub-sigmoid notch ostectomy, with sliding condylotomy.

SUB-SIGMOID NOTCH OSTECTOMY WITH SLIDING CONDYLOTOMY

An accurate preoperative determination of the angle and extent of the ostectomy and condylotomy is necessary if success is to be achieved. The roentgenographic examination should include cephalometric measurements as well as photographs and a face mask. Accurate plaster models of the dental arches should be mounted on an articulator with a movable mandibular unit. The maxillary model should be mounted in relation to the hinge axis and the eye-ear plane by means of a face-bow. The preoperative centric mandibular position is determined with an intraoral Gothic arch tracing. The postoperative centric mandibular relation to the maxilla is an arbitrary position; it

30. Ballin, Max. Double resection for the treatment of mandibular protrusion. D. Items Interest 30:422 June 1908.

31. Schultz, Louis. Bilateral resection of the mandible for prognathism. Surg., Gynec. & Obst. 45:379 Sept. 1927.

32. Talbot, W. O. A case of double resection of the mandible. D. Items Interest 29:631 Aug. 1907.

33. Thoma, K. H., and others. Deformities of the jaws. Oral Surg., Oral Med. & Oral Path. 1:108 Jan. 1948.

34. Dufourmentel, L. Le traitement chirurgical du prognathisme. Presse Méd. 29:235 May 23, 1921.

35. Dufourmentel, L. Surgical treatment of prognathism (Abst.). Internat. J. Orthodont. & Oral Surg. 7:566 Oct. 1921.

36. Gonzáles-Ulloa, Mario. Temporomandibular arthroplasty in the treatment of prognathism. Plast. & Reconstruct. Surg. 8:136 Aug. 1951.

37. Jaboulay, M. Les effets de la resection des condyles du maxillaire inferieur sur la situation de la rangee dentaire et al forme du menton. Lyon Méd. 75:519, 1895.

38. Jaboulay, M., et Berard, L. Traitement chirurgical du prognathisme inferieur. Presse Méd. No. 30:173 April 9, 1898.

39. Harshe, W. M. Bilateral resection of the jaw for prognathism; report of case. Surg., Gynec. & Obst. 15:51, 1912.

40. Burch, R. J. Mandibular ostectomy; case report. U. S. Armed Forces M. J. 2:777 May 1951.

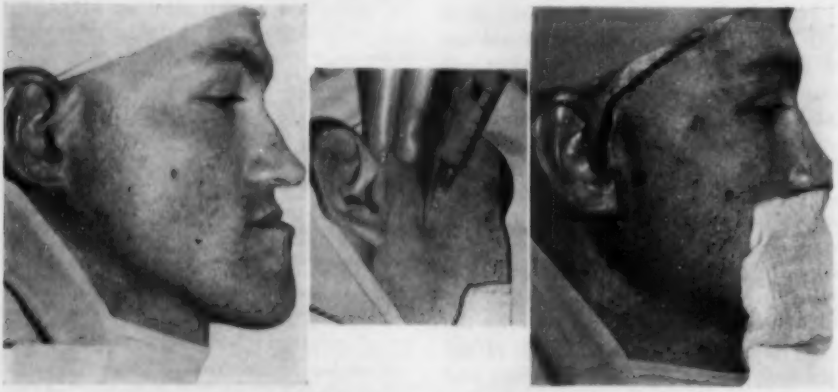

Fig. 1 • Left: Case 4 prepared for surgery. Note obtuse gonial angle. Center: Patient at surgery, receiving deep block of the third division of the fifth nerve at foramen ovale. Right: Skin incision. Upper portion is above hairline; vertical portion is along anterior inner margin of the ear

is the one that will establish the best intermaxillary relation and occlusion.

If orthodontic treatment is planned, it may be advisable to do part or all before surgery is performed. In most instances orthodontists advise that orthodontic treatment should follow surgery. In other instances, an unstable occlusion may be associated with the best intermaxillary relation. This can be corrected by selective spot grinding of the patient's teeth, or a small acrylic splint may be constructed to place between the arches. A metal pattern is constructed in reference to the eye-ear plane that will indicate the amount and direction of the ostectomy to be performed. A three inch handle is soldered to the metal template.

A day or two before surgery, wire loops or arch bars are placed on the maxillary and mandibular teeth to facilitate intermaxillary wiring during the operation. Immediately before surgery the hair is shaved 3 cm. above and anterior to each ear. After the patient is prepared for surgery (Fig. 1, left) the incision is outlined with a skin pencil or stain. Local anesthesia with infiltration of the skin flap and deep block of the third division of the fifth nerve (Fig. 1, center) should be used. The incision (Fig. 1, right) is made through the skin only and is begun 1 cm. above the shaved hairline and 5 cm. anterior to the ear. The incision is extended backward and downward directly to the most anterior portion of the helix and then down along the anterior inner margin of the ear. The incision is ended 0.5 cm. behind the lobule. The outlined skin flap is elevated by sharp dissection to expose the region of the mandibular notch adequately. This flap is brought forward and immobilized to the check with three sutures (Fig. 2, left).

Excessive bleeding can be controlled either by ligation or electric coagulation. The point over the mandibular notch (Fig. 2, center) is determined by deep palpation while the patient moves the jaw. The tissues directly over the mandibular notch are divided bluntly down to and through the periosteum covering the sub-sigmoid notch region of the ascending ramus (Fig. 2, right). That portion of the ascending ramus in the region of the sigmoid notch between the coronoid process and the neck of the condyle is exposed. Extreme caution is taken to pre-

41. Kemper, J. W. Surgical correction of mandibular prognathism: report of case. J. Oral Surg. 5:29 Jan. 1947.

42. Kitlowski, E. A. Surgical correction of mandibular prognathism. Ann. Surg. 115:647 April 1942.

43. New, G. B., and Erich, J. B. Surgical correction of mandibular prognathism. Am. J. Surg. 53:2 July 1941.

44. Smith, A. E., and Johnson, J. B. Surgical treatment of mandibular deformations. J.A.D.A. 27:689 May 1940.

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48. Dingman, R. O. Surgical correction of developmental deformities of the mandible. Plast. & Reconstruct. Surg. 3:124 March 1948.

49. Lloyd, R. S. Osteotomy for the correction of mandibular protrusion. Am. J. Orthodont. & Oral Surg. (Oral Surg. Sect.) 32:445 July 1946.

50. Pankow, C. W. Bilateral osteotomy through the ramus for correction of prognathism. New York D. J. 16:210 April 1950.

51. Sarnoff, Jacob, and Adelman, A. B. Prognathism: case report of surgical reduction. D. Digest 54:12 Jan. 1948.

52. Scher, S. L. The deformed chin and lower jaw. Ann. of Surg. 115:869 May 1942.

53. Grossman, W.; Clarkson, P., and Green, A. H. Treatment of severe prognathism by Kostecka's operation. Brit. D. J. 80:186 March 15, 1946.

54. Kostecka, François. Analyse critique de la thérapeutique chirurgicale des anomalies d'occlusion. 8th Congrès Dentaire International Sect. XII p. 236, 1931.

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56. Paine, D. T. H.; Taylor, C. V., and Felix, P. A case of mandibular prognathism corrected by Kostecka's operation. J. Roy. Army M. Corps. 97:177 Sept. 1951.

57. Reiter, Edward. Surgical correction of mandibular prognathism. Alpha Omegan 45:104 Sept. 1951.

58. Winter, Leo; Winter, R. E., and Winter, Leo, Jr. Surgical correction of prognathism of the mandible. Report of fifty cases. Oral Surg., Oral Med. & Oral Path. 2:1506 Dec. 1949.

59. Winter, Leo. Operative oral surgery, ed. 3. St. Louis, C. V. Mosby Co., 1947.

60. Winter, Leo. Surgical correction of prognathism. African D. J. 22:518 Oct. 1948.

61. Kazanjian, V. H. Surgical correction of deformities of jaws and its relation to orthodontia. Internat. J. Orthodont. & Oral Surg. 22:259 March 1936.

62. Sloan, A. C. Intraoral osteotomy of ascending rami for correction of prognathism. Texas D. J. 69: 375 Sept. 1951.

63. Babcock, W. W. The surgical treatment of certain deformities of the jaw associated with malocclusion of the teeth. J.A.M.A. 53:833, 1909.

vent injury to the facial nerve during separation and retraction of tissues and the bone division. An opening of between 1.5 to 2 cm. is adequate. With small blunt retractors, this opening can be moved directly over the desired area of bone. Division of the bone is made with a special three-bladed bone bur under a constant stream of normal saline solution.

The anterior vertical cut is made first (Fig. 3, left) and is started as far forward on the coronoid process as is necessary for the particular case. The cut is carried vertically downward not over 8 mm. parallel with the anterior border of the template. The template is placed on the bone and the outline marked with a scriber or bur (Fig. 3, right). The horizontal and posterior vertical cuts are then made. This completes the sub-sigmoid notch ostect-

64. Babcock, W. W. The field of osteoplastic operations for the correction of deformities of the jaw. D. Items Interest 32:439 June 1910.

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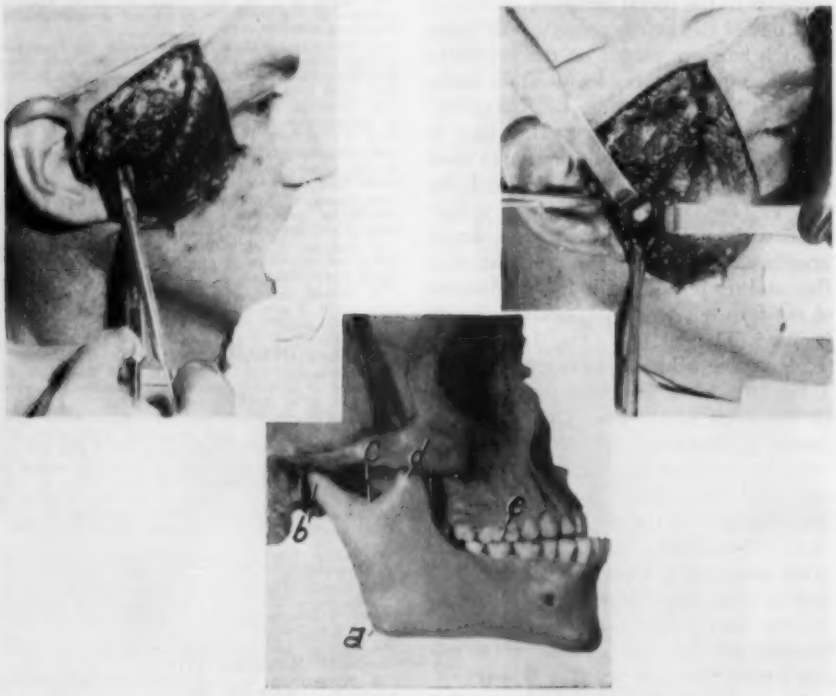

Fig. 2 • Left: Showing reflection of sharply dissected skin flap. Flap is rolled over and immobilized to cheek with three sutures. Scissors in place over sub-sigmoid notch to begin bluntly separating tissues over operative area. Center: Cast artificial stone prognathic mandible articulated to skull. a: obtuse gonial angle; b: mandibular condyle; c: sigmoid notch; d: coronoid process; e: no disproportion between maxillary and mandibular arches. Right: Showing exposure of posterior portion of sigmoid notch. This exposure has been accomplished by blunt separation of tissues to protect small branches of the facial nerve

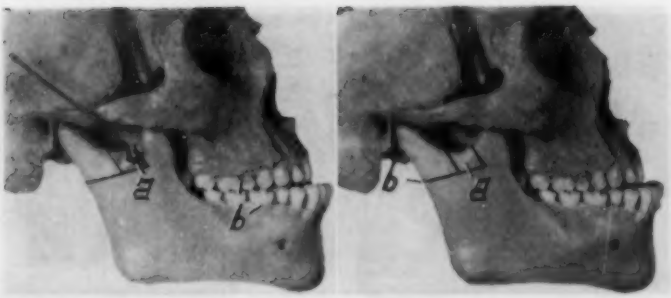

Fig. 3 • Left: Model illustrating surgical procedure. a: template to indicate amount of bone to be removed to effect postoperative position which had been determined previously. b: wire loops placed prior to surgery to facilitate intermaxillary wiring during operation. Right: Model illustrating surgery. a: area of sub-sigmoid notch ostectomy; b: outline of condylotomy

omy (Fig. 4, left). The thin piece of bone is removed from the wound. At this point two small drill holes are made, one through the proposed anterior-inferior angle of the proximal fragment and the other in the ramus below the anterior vertical cut. An .018 stainless steel wire is looped between the two holes (Fig. 4, right). The horizontal cut is then continued posteriorly to effect a condylotomy (Fig. 5, left). Immediately on completion of this cut, the muscles pull the mandible posteriorly, sliding on this osteotomy.

Occasionally in a severe case, the posterior border of the ramus may impinge the soft tissues between itself and the mastoid process. If this occurs, a small portion of the posterior superior angle is removed with a side-cutting Shearer rongeur forceps. The sliding condylotomy is now complete. The stainless steel wire is twisted, cut, and the sharp ends bent into the bone (Fig. 5, right). The wound is closed by placing 2 or 3 mattress type, no. 0 catgut sutures to close the bluntly separated tissues. The skin flap is returned to its original position and immobilized with interrupted silk sutures (Fig. 6, left). A small Penrose drain is placed under the flap, ending below the lobule.

After the completion of one side the mandible has a noticeable lateral deviation. A similar surgical procedure is carried out on the opposite side in accordance with a predetermined plan. After the sub-sigmoid notch ostectomy with sliding condylotomy has been completed on both sides, the mandible is fixed with intermaxillary wires in the new position (Fig. 6, center). A head bandage is applied. The drains are removed in 24 hours, the skin sutures in four days, and the intermaxillary wires in six or seven weeks (Fig. 6, right).

ADVANTAGES OF NEW LOCATION OF OSTECTOMY

The new location of the ostectomy produces a more physiologic result since the ostectomy is located in the sub-sigmoid notch region and there is no sacrifice of teeth.

The operation entails no sacrifice of useful bone. Sicher has shown that prognathism is a result of a perverted growth pattern of the mandible. The obtuse gonial angle is a result of the prognathism and not prognathism the result of the obtuse gonial angle. The older sites for ostectomy required the removal of useful bone from the arch. This new site allows bone to be removed which is not essential to the functioning of the oral

Fig. 4 • Left: Model illustrating surgery. a: ostectomy complete; b: location of bone division between ascending ramus and condylar fragment outlined with pencil. Right: An .018 nonelectrolytic wire (a) in place prior to division of condyle from ascending ramus. A small snare is used to pull wire from inner surface of posterior hole (b). A loop of small wire is now placed through anterior hole (c) and used to pull end of nonelectrolytic wire from medial surface through anterior hole

organ. Because of this obtuse angle, the ostectomy in the sub-sigmoid notch region more nearly corrects the deformity.

In sub-sigmoid notch ostectomy, no major nerve or blood vessel is disturbed. Hensel[14] has reported that the distance from the depth of the sigmoid notch to the lingula is from 7/16 to 10/16 of an inch. Our measurements were in close accord with Hensel's; they showed an average distance of 18 mm. This allows a safe margin for the removal of bone without the danger of severing the inferior alveolar nerve and vessels. The extraoral approach to ostectomy in the body of the mandible has made it possible to preserve nerve continuity in some cases, but the nerve and vessels are then doubled on themselves and returned to a dead space hollowed from the bone.

When the older methods were used, the removal of bone from the arch changed

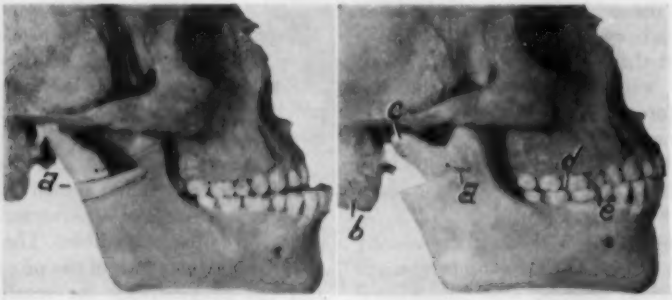

Fig. 5 • Left: Model showing condylar fragment divided from ascending ramus (a). Immediately on completion of bone division the muscles pull mandible posteriorly to predetermined postoperative position. Right: Sub-sigmoid notch ostectomy with sliding condylotomy complete. When condyle and ascending ramus have been divided, the muscles pull mandible to new position. a: interosseous wire, b: mastoid process; c: condyle in original position; d: improved occlusion; e: intermaxillary wires

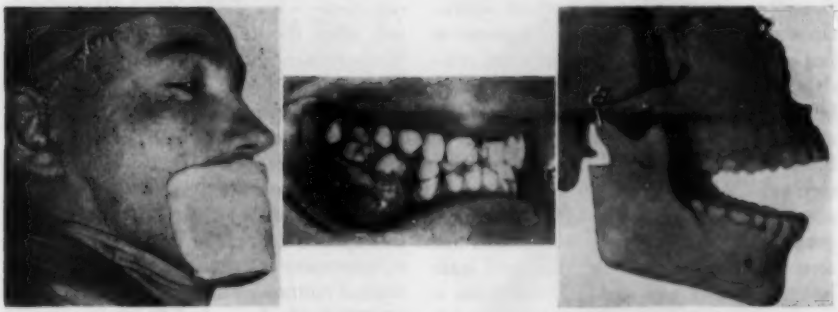

Fig. 6 • Left: Showing skin flap returned and sutured to original position with interrupted no. 00 silk sutures. Center: Sub-sigmoid notch ostectomy with sliding condylotomy complete. Note intermaxillary wires in place. Right: Intermaxillary wires removed after healing. a: Condyle in original preoperative position

the muscle arrangement in the floor of the mouth. The mylohyoid ridge was shortened, which caused a portion of the mylohyoid muscle to be deprived of its origin, and the insertion of the genioglossus, geniohyoid and digastric muscles was shortened. The oral organ is adaptable and accommodates itself so well that function does not appear to be impaired. Nevertheless, the derangement of the floor of the mouth with its musculature, nerves, vessels, salivary glands and ducts should be considered. The new site of ostectomy does not cause this interference with the function of structures in the floor of the mouth and therefore is more physiologic.

If the ostectomized section is removed from the body of the mandible as was done in the older methods, and there is no tooth in the proximal fragment, then the forces of mastication tend to disturb the bone apposition. This has been such a problem when the older methods were used that several authors have advocated procedures to overcome this difficulty through the use of interosseous wiring or plating. These are attempts to correct a condition which need not have developed. The ostectomy performed in the body of the mandible without a definite centric stop on the proximal fragment is unphysiologic. The new site in the sub-sigmoid notch region is more physiologic as the powerful muscles of mastication are not divided from the dental arch, where the resultant force is applied.

When bone is removed in the body of the mandible, the tongue space is diminished and this leads to tongue biting. The large tongue becomes a troublesome problem. The prevention of chronic trauma to soft tissue in the oral organ is one of the goals of modern dental treatment. The bone removed in the sub-sigmoid notch region does not create this unphysiologic condition.

The old French operation[38, 39] of bilateral condylectomy has been revived.[29, 30] The destructive nature of this operation has been adequately reviewed recently.[68, 69] Other types of surgery which cause gross derangement of the temporomandibular joints are the open or closed osteotomies of the condyles and the creation of "flail joints" by interposing fascia in the condylotomy site. As has been men-

68. Smith, A. E., and Robinson, Marsh. A new surgical procedure in bilateral reconstruction of condyles, utilizing iliac bone grafts and creation of new joints by means of non-electrolytic metal. A preliminary report. Plast. & Reconstruct. Surg. 9:393 May 1952.

69. Smith, A. E., and Robinson, Marsh. Mandibular function after condylectomy. J.A.D.A. 46:304 March 1953.

tioned earlier in this article, those operations in which the proximal fragment is not controlled result in an abnormal condylar-disk-fossa relation. When sections of bone are removed from the body, the rami must be rotated inward to allow for bone contact with the smaller anterior segment. This results in a horizontal rotation of the condyle. This rotation is greatest in cases where large sections are removed from a tapering arch and least when small sections are removed from a square arch. The new sub-sigmoid notch ostectomy with sliding condylotomy does not alter the form or function of the temporomandibular joints and therefore is more physiologic.

This new site of ostectomy can be approached and closed with strict surgical aseptic procedures. This may be a theoretical point now, however, with the present day use of antibiotic and chemotherapeutic drugs. The intraoral approach to ostectomy is criticized on the basis of wound contamination. The extraoral approach to the body is difficult because of

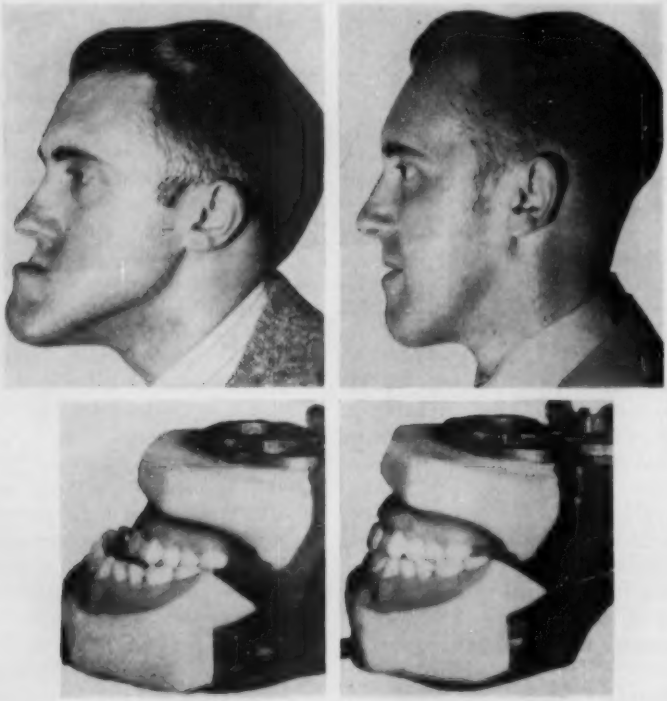

Fig. 7 • Above left: Case 1. Preoperative view, June 19, 1941. Note obtuse gonial angle. Mandible protrudes 23 mm. Above right: View taken eight weeks after surgery. Note normal profile and improved appearance; small scar still visible. Below left: Models mounted in preoperative centric jaw relation. Articulator allows slotted mandibular model to be moved backward to normal intermaxillary relation. Patient had no tooth contact on the right side and only one contact on the left side. Below right: Models of postoperative intermaxillary relation. Slotted lower model has been moved postoperatively on articulator bar to normal intermaxillary relation

the technic necessary to avoid oral contamination. An extremely thin membrane separates the region of ostectomy from the oral cavity, and it is difficult to be certain that contamination has not occurred.

ADVANTAGES OF NEW LOCATION OF OSTEOTOMY

The new location of the osteotomy produces a more physiologic result since muscle forces do not cause derangement at the site of the osteotomy. Division of the bone anywhere between the insertion of the muscles of mastication and the teeth, where these forces are applied, invites failure. The powerful temporalis muscle must not be separated from the teeth or destructive forces develop. This is also true of the masseter and internal pterygoid muscles. This principle holds for any site of osteotomy in the ramus of the mandible and in the body of the mandible as far anteriorly as the point where there is a tooth in the proximal fragment. When this unphysiologic procedure is used, stabilization is difficult if not impossible. Even with intermaxillary wires, the forces may be so great as to extrude the anterior teeth and cause an open bite. Only slight force is necessary to stabilize the denture when the condyle is fractured or divided. The temporalis, masseter and internal pterygoid muscles still act, but their resultant force is applied to the denture area and not across the site of the osteotomy.

Surgeons have advocated transosseous wiring, plating and other methods of stabilization in order to correct the older surgical procedures which were unphysiologic. The natural forces in the mandible were at cross purposes with the result hoped for from the surgical correction. When this new technic is used, the nerves and vessels are not severed and the wound is not compounded into the mouth.

The advantages of the open procedure over the closed method are that in the open method the osteotomy can be made in a predetermined position, which allows for a satisfactory result. In the older, closed osteotomy methods, the angle at which the ramus was cut was a guess. The blind cutting of the ramus often resulted in an inability to get the posterior teeth in occlusion after the sliding of the mandible posteriorly on the inaccurately angulated cut.

Fig. 8 • Case 1. Photograph taken in December 1951, ten years postoperatively. Note absence of visible scar line

The open method relieves the surgeon of the fear of cutting vessels or branches of the facial nerve or of forming a parotid fistula; also bleeding can be controlled, which aids in the healing.

The extraoral approach is better than the intraoral since any intraoral approach to the division of bone carries the risk of infection.

This new technic affords better esthetic results than the older ostectomy procedures. In the extraoral approach to ostectomy in the body of the mandible, a scar is left under the lower border of the mandible. Ordinarily this is not of great importance but sometimes the patients complain about it. The inverted "J" incision anterior to the ear is less conspicuous, since it is mostly above the hair-

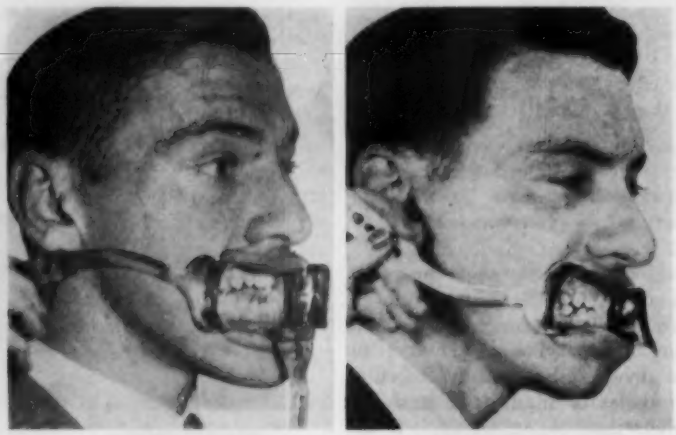

Fig. 9 • Left: Case 2. Preoperative view taken December 28, 1942. Note gross deformity of prognathism, open bite and left lateral deviation. Right: Postoperative view taken March 30, 1944. Note normal profile and intermaxillary relation. Occlusion shown is after orthodontic treatment

line and the portion in front of the ear is obscured by the ear contour. Also the tongue being too big for the space provided when the older ostectomy procedures are used is esthetically objectionable.

CASE REPORTS

To date, 57 patients have had their mandibular prognathism corrected by this new technic. Six abbreviated case reports are given here in order to illustrate some aspects of the problem.

Case 1 • A 28 year old music teacher in the university was examined June 11, 1941, because of mandibular prognathism (Fig. 7, above left and below left). The patient stated that he had first noticed his lower jaw moving forward when he was about 14 years old. On July 7 the patient's mandibular prognathism was corrected by the procedure outlined earlier. The prognathism was symmetrical and the sections removed from the sub-sigmoid notch region measured 23 mm. on each side (Fig. 7, above right and below right). In this extreme case a triangular piece of bone was removed from the distal angle of the ascending ramus to prevent impingement against the mastoid process. The patient made an uneventful recovery (Fig. 8).

Comment • This was the first operation in which this new technic was used. The method is the result of over 30 years of intensive study by one of us (A.E.S.). The condition of this patient has now been followed for over 10 years, which shows the permanency of the physiologic result.

Case 2 • A 19 year old, white, deep-sea diver was examined December 28, 1942 (Fig. 9, left). The patient complained of his facial appearance, his difficulty in mastication and of interference with his speech. The patient's father stated that he had first noticed his son's lower jaw becoming larger and moving forward when the boy was eight years old. Since that time the condition had become pro-

gressively worse. The patient stated that his sister, aged 23, had a more pronounced mandibular prognathism than himself.

On December 31 the mandibular prognathism was corrected by the method described earlier (Fig. 9, right). The section of osteotomy on the right side measured 15 mm. while the section on the left, 13 mm. The patient made an uneventful recovery. On December 31, 1943, under local anesthesia, the prominence of the overdeveloped symphysis was removed by making a curved incision beneath the lower border of the symphysis, elevating the periosteum and removing a portion of the overdeveloped mental process.

Comment • This case illustrates what can be accomplished by this new surgical technic, combined with efficient orthodontic treatment. A combination of surgical and orthodontic treatment has corrected an extreme prognathism, open bite and slight left lateral deviation.

Case 3 • A 22 year old, white housewife was referred by her otologist because of pain in the right temporomandibular joint. About one year previously the patient had developed an intermittent pain in the area of the right ear. This had become progressively worse. She had consulted her otologist who examined her ears and found them normal. He made a tentative diagnosis of right temporomandibular joint syndrome, manifested by pain referred to the right ear. The syndrome was caused by malocclusion of the teeth.

The examination on September 7 (Fig. 10, left) revealed a well developed and nourished, white woman in her second trimester of pregnancy. She had a full complement of teeth except for the upper right third molar. With the teeth in centric relation, the patient exhibited an 8 mm. symmetrical mandibular prognathism, and on the opening movement the jaw deviated to the right. There was moderate tenderness of the tissues about the right temporomandibular joint. Surgery was deferred until the termination of her pregnancy. She was treated temporarily by intermaxillary wiring for a period of one week, soft diet, rest, heat and gentle massage.

On November 4, at the California Hos-

Fig. 10 • Left: Case 3. Preoperative view taken September 7, 1943. Mandible protrudes symmetrically 8 mm. Right: View taken January 5, 1953, over nine years after surgery

pital, Los Angeles, the patient's mandibular prognathism was corrected by the sub-sigmoid notch ostectomy with sliding condylotomy. The patient made an uneventful recovery and has had no pain in the temporomandibular joints. She has been examined periodically, the last examination being on January 5, 1953 (Fig. 10, right).

Comment • This case has been followed over nine years. Again, the length of time proves the permanency of the physiologic result.

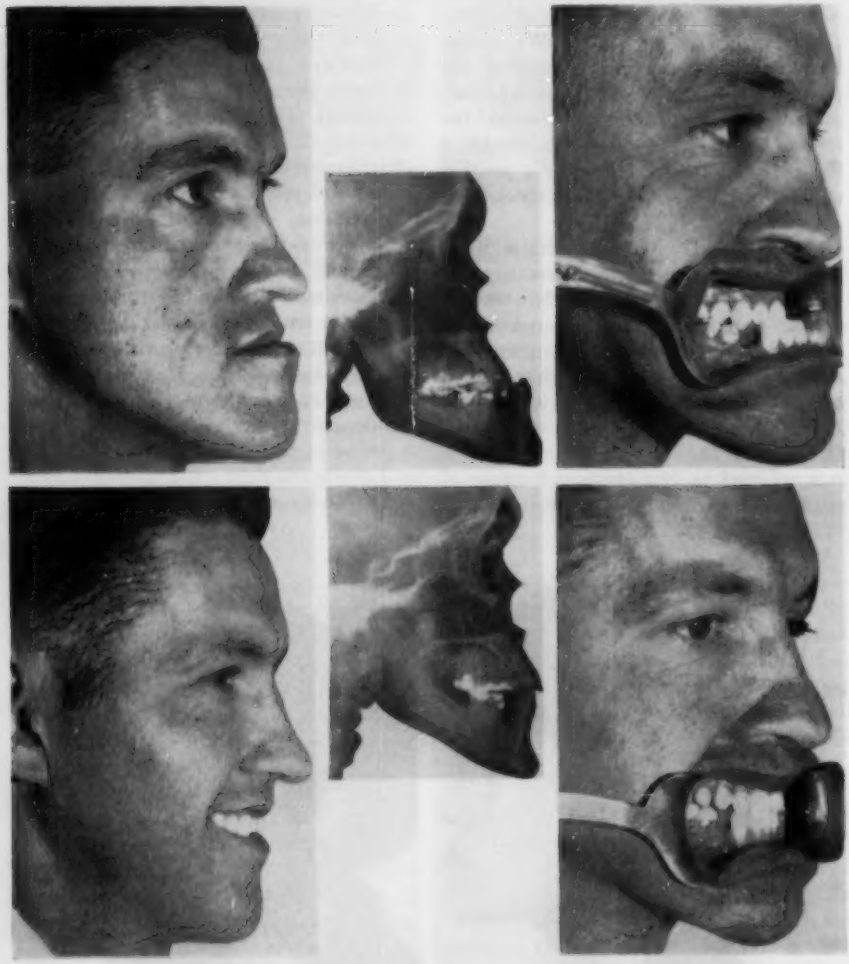

Fig. 11 • Case 4. Above left: Preoperative view taken September 23, 1950. Note typical prognathic deformity. Above right: Preoperative occlusion of teeth. Measurements show a 20 mm. symmetrical protrusion of mandible. Below left: Postoperative view taken June 28, 1952. Note normal profile. Below right: Note postoperative intermaxillary relation and occlusion

Fig. 12 • Case 5. Left: Preoperative view taken June 28, 1943, showing extreme prognathism and overdevelopment of mental process. Right: Postoperative view taken January 5, 1953, nine and a half years postoperatively

Case 4 • A 28 year old, white man was examined September 23, 1950 (Fig. 11, above) because of a prognathic mandible. On January 15, 1951, at St. Vincent's Hospital, Los Angeles, the patient's mandibular prognathism was corrected by the sub-sigmoid notch ostectomy with sliding condylotomy. Twenty millimeters of bone was removed from each side. Preparatory to surgery it was necessary to remove 1 mm. of tooth structure from the distal buccal cusp of the upper right first molar and the occluding cusp of the lower right molar so as to establish a postoperative stable occlusion for intermaxillary wiring. The patient made an uneventful recovery (Fig. 11, below left). Some selective spot grinding further improved the occlusion (Fig. 11, below right).

Comment • This patient exhibited the usual elation because of his improved appearance and the increased masticatory function. As in all cases, a roentgenographic examination was made both preoperatively and postoperatively (Fig. 11, above center and below center).

Case 5 • A 25 year old, white woman was examined April 23, 1943, (Fig. 12, left) because of her protruding lower jaw. She had been advised by her dentist that she would not be able to have satisfactory dentures after her teeth were lost and she was greatly worried.

On October 29, at St. Vincent's Hospital, under block anesthesia, the patient's mandibular prognathism was corrected by the sub-sigmoid notch ostectomy. Twenty-two millimeters of bone was removed from each side. On February 28, 1948, surgery was performed in the office to reduce the overdeveloped mental process. The patient made uneventful recoveries. She has been examined periodically up to the present time (Fig. 12, right). After nine and one half years, she exhibits good function and her social adjustment is good. She is married and has three children.

Case 6 • A 16 year old, white schoolgirl from Vancouver, B. C., was referred through the University of California Dental School for surgical correction of her mandibular prognathism on August

Fig. 13 • Case 6. Above left: Preoperative view taken August 1, 1944 showing mandibular prognathism. Above right: Preoperative view showing 12 mm. protrusion of mandible. Below left: Postoperative view taken August 27, 1946, two years after surgery. Orthodontic treatment has been completed. Note normal profile. Below right: View taken two years postoperatively showing occlusion. Retaining band is still in place on maxillary right lateral incisor

1, 1944 (Fig. 13, above). After two years of orthodontic treatment her orthodontist advised that the patient's deformity could not be corrected by further treatment. On August 11, at St. Vincent's Hospital, Los Angeles, the patient's mandibular prognathism was corrected by the use of this new technic. Twelve millimeters of bone was removed from each sub-sigmoid notch region to correct the abnormal intermaxillary relation. The patient made an uneventful recovery and was referred back to her orthodontist in Vancouver. After eight months the orthodontic treatment was complete (Fig. 13, below).

Comment • Again the value of combined surgical and orthodontic treatment was demonstrated. No criticism is intended of the presurgical orthodontic treatment attempted. Orthodontists now agree that basilar bone cannot be deviated from the

inherent growth potential. This fact makes teamwork imperative between the surgeon and the orthodontist.

SUMMARY

A new surgical technic for the correction of mandibular prognathism is presented. This procedure has been used successfully 57 times in the past 12 years. The surgical procedure is done under block anesthesia. A surgical approach is made over the sigmoid notch area in a manner that hides the scar and protects the facial nerve. A section of bone is removed from the sub-sigmoid notch region of the ascending ramus. This ostectomy is the same dimension as the prognathic deformity of that side. On a level with the base of the ostectomy, the condylar segment is separated from the ascending ramus. The muscles pull the mandible posteriorly to the predetermined improved position. Both sides are surgically corrected at the same operation. Intermaxillary wiring is used until the divided bone heals. This usually requires 6 to 7 weeks.

In the vast majority of cases, this new procedure is more physiologic, gives better results, and more nearly corrects the prognathic deformity than former operations.

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The Progress of Science • It is a platitude that science is one of the driving forces in our civilization. It is equally obvious that science cannot be grasped from the harangues of an inspired lecturer, but only from practical work; making physical experiments, carrying out chemical analyses, looking at cells through the microscope, or dissecting animals. It is, however, less certain whether learning by heart the solution of some differentials, the formulas of some dozens of chemical compounds, or the names of the twenty-nine bones in the human skull, does much for what is called a liberal education. *Ludwig von Bertalanffy, "Philosophy of Science in Scientific Education," The Scientific Monthly, 77:233 November 1953.*

Lack of effectiveness of a dilute iodine solution in the treatment of gingivitis, pericoronitis and recurrent aphthous stomatitis

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Effective therapeutic action has been claimed[1, 2] for a new effervescent pharmaceutical preparation for oral use known as Heliogen.[3] One Heliogen tablet, when dissolved in water, is reported by the manufacturer[1] to release 25 mg. of free and uncombined nascent iodine as the result of the reaction between potassium iodide and chloramine-T. According to the manufacturers, ultraviolet radiation in small amounts is generated in the solution. Heliogen has been reported[1] to be bactericidal to gram-negative and gram-positive organisms and spores, to be fungicidal and to be effective against the causative agents of Vincent's angina. No resistance or tolerance developed by any organism has been reported, however. According to the manufacturer,[1] Heliogen is quick-acting, stable and nontoxic, it promotes healing, it is palatable, it deodorizes the oral cavity, it does not stain, it has no side effects or allergenic manifestations, it has a broad nonselective antibacterial spectrum, and it provides "the means for obtaining maximum and immediate remission of infectious conditions, improvement of the general condition of the mucosa and gingival tissues, and the promotion of more rapid healing."

In an unpublished study cited by the manufacturer, Heliogen was used in almost 700 cases of oral and gingival diseases. The results were described as follows:

> Highly significant results were obtained in cases of Vincent's angina, periodontoclasia, pericoronitis, gingivitis, aphthous ulcers, etc. Improvement was noted promptly in most cases, usually by the following day. Many cases either slow to respond or refractory to antibiotics administered orally, by injection, as a mouthwash, or by a combination of these routes, showed marked improvement and materially increased (their) rate of progress upon change to Heliogen therapy. . . . In cases of stubborn inflammation of the throat and mouth, the condition cleared up satisfactorily with Heliogen. . . . In all cases, Heliogen therapy is used in conjunction with manipulative procedures designed to eliminate predisposing mouth conditions."

The purpose of the present investigation was to evaluate certain of these claims in a controlled study.

METHODS

The subjects in this study were 166 patients, aged 13 to 61, 58 men and 108 women.

This study was supported in part by a grant-in-aid from Ciba Pharmaceutical Products, Inc., Summit, N. J.

The Heliogen tablets and placebo tablets used in this study were supplied by Heliogen Products, Long Island City, N. Y.

Division of research, Hannah and Harry Posner Research Laboratory, School of Dental and Oral Surgery of the Faculty of Medicine, Columbia University.

1. New oral therapy—Heliogen. Brochure. Long Island City, N. Y., Heliogen Products, Inc.

2. Berliner, Abraham. Clinical periodontology; dynamics and treatment. New York, Park Press, 1953, p. 120.

3. American Dental Association, Council on Dental Therapeutics. Heliogen Tablets classified in Group D. J.A.D.A. 46:334 March 1953.

Study A: Chronic Marginal Gingivitis • In Study A, Heliogen tablets dissolved in water were used as directed by the manufacturer for periods of from three to six days by 100 patients with chronic marginal gingivitis of varying severity. These patients were in normal health otherwise. The medication was used at home without supervision according to the instructions suggested by the pharmaceutical house for its use. No other special home care was prescribed, nor was any other effort at individual home care made. In 50 comparable cases placebo tablets were administered, which were identical in every way with the medicated tablets except for the substitution of inert filler for the active ingredients, potassium iodide and chloramine-T. Before and after treatment the following conditions of the patients were evaluated: clinical appearance of the gingivae—including swelling and inflammation, gingival hemorrhage incident to conservative subgingival curettage as evidenced by ease of provocation of bleeding, duration of bleeding, and quantity of bleeding; the patient's own estimate of his oral condition; evidence of infection; gingival pain with stimulation; and gingival pain without stimulation. At the end of treatment the conditions were rated on an over-all basis as improved, unchanged or worse. In all cases, results were determined on the basis of the evaluation of the condition of one upper quadrant and the opposite lower quadrant, which had been examined and scaled before treatment, compared with the condition of the remaining quadrants after treatment. Acceptance of the medication by the patient was rated as good, average, poor or "refused to continue medication." Side reactions or evidences of irritation caused by treatment were specifically noted and recorded.

Study B: Recurrent Oral Aphthae • In Study B, ten patients with recurrent oral aphthae were given placebo tablets, one tablet four times a day on days 1, 2, 5, 6, 9 and 10 after the appearance of the lesions according to the regimen directed by the manufacturer. As soon as the oral aphthae recurred, Heliogen tablets were administered as a mouthwash—for palliative therapy—one tablet four times a day on days 1, 2, 5, 6, 9 and 10. In all, patients were examined two or three times weekly through a minimum of five cycles.

Study C: Pericoronitis • In Study C, ten cases of pericoronal infection, usually involving partially erupted third molars, were treated first with placebo tablets used as a mouthwash, one tablet four times a day for two days, then with Heliogen tablets used as a mouthwash, one tablet four times a day for two to six days.

In all cases patients were instructed to comply with the following printed instructions for the use of Heliogen tablets or placebos:

1. Dissolve one tablet in four ounces (½ glass) of lukewarm water.
2. Use immediately after tablet is completely dissolved.
3. The entire solution should be used in successive rinses and gargles. At least one minute should be devoted to this.
4. Force solution into all parts of the mouth and between the teeth.

RESULTS

Results of the treatment of the various clinical conditions by the administration of Heliogen tablets are summarized in the table. No statistically significant differences in the results were observed between the groups given Heliogen tablets and the control groups given placebo tablets.

In the concentration used, oral and gastrointestinal side reactions resulting from the administration of Heliogen tablets in 100 cases included a burning sensation in 28 cases, taste disturbance in 34 cases, nausea in 3 cases, vomiting

Table. Response to Heliogen mouthwash, administered four times a day, in cases of gingivitis, recurrent aphthous stomatitis and pericoronitis

Study	Disease treated	No. of cases	Av. days of use	Definite clinical improvement transient	No response-condition same	Condition worse	Decreased gingival hemorrhage	Side reactions							
				With respect to: Clinical appearance, gingival hemorrhage, gingival sensitivity and the patient's estimate of his oral condition.				Burning	Taste disturbance	Nausea	Vomiting	Soreness or irritation	No. patients with reactions	Discontinued by patient	Discontinued by dentist
A	Chronic marginal gingivitis														
	Heliogen	100	4	14	85	3	19	28	34	3	1	5	39	18	5
	Placebo	50	4	6	43	1	8	0	2	1	0	2	3	3	0
B	Recurrent aphthous stomatitis														
	Heliogen	10	6	3	5	2	—	—	—	—	—	—	—	—	—
	Placebo*	10	6	2	7	1	—	—	—	—	—	—	—	—	—
C	Pericoronitis														
	Heliogen	10	2-6	6	4	0	—	—	—	—	—	—	—	—	—
	Placebo**	10	2	4	5	1	—	—	—	—	—	—	—	—	—

*Administered through one cycle prior to Heliogen medication to the same patient.
**Administered for two days prior to Heliogen medication to the same patient.

in 1 case and soreness or irritation in 5 cases compared with side reactions after the administration of placebo tablets in 50 cases: taste disturbance in 2 cases, nausea in 1 case and soreness or irritation in 2 cases.

DISCUSSION

At least a portion of any "favorable" results which might seem to have occurred in the condition of patients of both the groups given placebo tablets and the groups given Heliogen tablets probably resulted from the temporarily increased interest in and effort at oral hygiene on the part of the patients and from the mechanical cleansing action of mouthwashing during the period of this study.

SUMMARY

Results obtained from the administration of Heliogen tablets in 100 cases of chronic marginal gingivitis, 10 cases of pericoronitis, and 10 cases of recurrent aphthous stomatitis were compared with results obtained from the administration of placebo tablets in 50 cases of gingivitis, 10 cases of recurrent aphthous stomatitis and 10 cases of pericoronitis—the latter 20 cases were later treated with Heliogen tablets. In the treatment of chronic marginal gingivitis, pericoronitis and recurrent aphthous stomatitis, under the conditions of this experiment, no statistically significant differences in the results were observed between the experimental groups given Heliogen tablets and the control groups given placebo tablets.

COUNCIL ON DENTAL HEALTH

The American Dental Association's position on federal grants-in-aid for dental health programs

For many years, the American Dental Association has recognized the need for federal participation in programs for the improvement of the dental health of the people of this nation. There are two principal functions which the Association believes the federal government should perform in the improvement of the dental health of the public, functions that are based on the fact that American life, traditionally, is based on community life and that needs can be determined best and met most satisfactorily through individual and community effort. These functions are to conduct research relating to the cause, prevention, methods of diagnosis and treatment of dental diseases and conditions, and to provide assistance to the states for the purpose of developing and maintaining community dental health programs. This assistance should be in the form of technical, consultative assistance to the state health departments and financial assistance to the states through grants-in-aid. The Association's actions relating to federal grants-in-aid are summarized in the following paragraphs, and its position and the reasons for this position are restated.

REVIEW OF ASSOCIATION ACTIONS

The National Health Program Committee • As early as 1940, the National Health Program Committee of the Association recommended that federal grants-in-aid should be made to the states " . . . for the purpose of initiating and maintaining state and community dental health programs that will produce a permanent and effective influence on the public health."[1]

Congressional Bill S1099 • In 1945 the Association assisted in the drafting of legislation designed to promote dental health through federal assistance. Two bills were introduced: S190 to promote dental research, and the other, S1099, to provide grant-in-aid funds to assist states in developing and maintaining dental health programs.[2] The provisions of the first bill were later enacted into law, but insufficient financial support has been provided to carry out the intent of the legislation. The provisions of S1099 have not been enacted into law.

The specific provisions of S1099 were for:

1. Financial aid to states for the prevention and control of dental diseases, and for treatment, provided that the methods of rendering services would be determined on a local level.
2. Training of personnel for dental health work and education of the public concerning matters related to dental health.
3. Federal grants to states, municipalities, educational institutions and other nonprofit

1. American Dental Association, National Health Program Committee. Dentistry and government. Chicago, The Association, 1940.

2. United States Senate, Committee on Education and Labor. Hearings before the Committee on S 190 and S 1099, June 26-28, 1945. Washington, D. C., Government Printing Office, 1945.

agencies for studies and demonstration programs in dental care, administrative practices and development of methods of payment for dental services.

4. Funds to enable the U. S. Public Health Service to conduct studies similar to those outlined in the foregoing paragraphs.

The Federal Government's Topical Fluoride Program • In 1948, the Congress appropriated a sum of money to promote the wider adoption of topical fluoride applications for the partial prevention of dental caries in children. The Association testified before the Congressional Committee that was considering the bill and stated that the

> . . . administration of the program should be decentralized and that all health educational material, publicity releases and other information designed for the public should be screened carefully to prevent the distribution of misinformation.[3]

The bill, as finally passed, however, provided for administration by the Public Health Service, and one million dollars for the first year's operation of the program was made available to that agency on July 1, 1948. The program was considered by many as a federal treatment program, operating directly in the states and communities, and considerable opposition to the direct federal administration of the program ensued. The program was designed as a demonstration to show communities how they could conduct locally-sponsored programs, and it is reported that approximately 1,150 dental health programs, mostly rural, now provide topical fluoride applications for children.[4]

The issue of direct federal administration of the program was discussed editorially in THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION in October 1949. The editorial, entitled, "Funds for Topical Fluoride Program Should Be Made on Grants-in-Aid Basis," stated, in part,

> There is no question as to the desirability of educating the public regarding the effectiveness of the topical fluoride technic. There is some question as to the desirability of having the project, which can easily develop into a treatment program, administered from the federal rather than the state level.[5]

The editorial went on to state that an unfortunate situation had developed because Congress failed to establish the project originally on a grants-in-aid basis, rather than as a direct appropriation to a federal agency.

The concern of the Illinois State Dental Society regarding the administration of the program resulted in a resolution which it submitted to the American Dental Association in 1949. The resolution, adopted by the national body, instructed the Council on Legislation and other appropriate Association agencies:

> . . . to employ such additional steps as may be necessary to establish controls on any further appropriation or on the extension of the existing appropriation [for the topical fluoride program] to provide that this appropriation be allocated on a grants-in-aid basis under the control of the individual states.[6]

A similar resolution was presented to the Association again in the following year (1950) by the Connecticut Dental Association,[7] and other societies voiced their disagreement with the direct administration of the program by the federal government.

A Dental Health Program for the Community, State and Nation • In order to underscore the need for state administration of funds provided by the federal government for health purposes within the states, the Association's comprehen-

3. News of dentistry. U.S.P.H.S. proposes national topical fluoride program. J.A.D.A. 36:521 June 1948.

4. Knutson, J. W. Dental public health accomplishments and predictions. Address before Dental Health Section, American Public Health Association, Nov. 11, 1953. Unpublished.

5. Funds for topical fluoride program should be made on grants-in-aid basis. Editorial. J.A.D.A. 39: 460 Oct. 1949.

6. American Dental Association. Transactions 1949, p. 321.

7. American Dental Association. Transactions 1950, p. 123-124.

sive statement entitled, "A Dental Health Program for the Community, State and Nation," which was adopted in 1949,[8] specified that:

> . . . Grants-in-aid should be considered as an acceptable method of supporting state dental health programs provided that the right of the state to adapt any program to meet its own needs is safeguarded.

Local Public Health Units • The Association, in a resolution adopted by the House of Delegates in 1951,[9] again stated its position on the desirability of local health programs. The resolution stated:

> *Resolved,* that the Association support the development of public health units in areas in which none now exist and the continued improvement of existing units whose activities are consistent with the policies of the Association and of local and state dental and medical societies, and be it further
>
> *Resolved,* that where local funds are inadequate, state and, if necessary, federal funds may be sought. Grants-in-aid are considered as an acceptable method of supporting public health programs provided that the right of the state or community to adapt any program to its own needs is safeguarded.

Association's Position on Federal Support for Dental Health Programs • In 1952 the Association adopted two statements specifically relating to the need for more intensive action for the improvement of dental health in the various states and communities, and to the need for federal support of these activities.[10]

One statement defined dental public health and the activities by which dental public health implements its purposes. A second statement emphasized the necessity for strengthening the dental units in state health departments through the provision of adequate budgetary resources for the dental program and through giving the dental unit an administrative status that would allow it the same freedom and facilities as those enjoyed by other comparable units in the health department. Such a program could be advanced materially, the statement pointed out, by the Association's fostering of earmarked grants-in-aid to state health departments for dental purposes, and by its urging the constituent societies to obtain proper status for the dental units in their respective state health departments. The following paragraph from the second statement specifies one of the reasons the Association believes federal grants-in-aid funds should be earmarked for dental health services:

> Grants-in-aid have been made by the federal government for many years for health purposes but it is significant that, at the present time, only 0.4 per cent of the total grants made by the U. S. Public Health Service are allocated to dental programs. Dentistry in many states is not considered as a basic health service and thus is automatically deprived of grants-in-aid which are made for basic health services. In order to overcome this difficulty, dentistry should consider the adoption of a program of fostering earmarked funds as has been done successfully for the program to improve mental health, to procure control of cancer, venereal disease, tuberculosis and heart disease, to treat crippled children and to improve maternal and child health.

[At the time of the first 1954 meeting of the Council on Dental Health, May 17 and 18, a bill was before Congress that would eliminate the five categorical grants and one general grant specified at the federal level, substituting one over-all grant (S2778 and HR7397). The American Dental Association supported the bill.[11] At its May meeting, the Council on Dental Health made the following recommendation:

> In the event the proposed grant-in-aid bill fails to be adopted by Congress, with the result that categorical grants for mental health, tuberculosis, etc., are continued, the Council on Legislation should continue to testify in favor of categorical grants for dentistry for the rea-

8. American Dental Association. Transactions 1949, p. 264.

9. American Dental Association. Transactions 1951, p. 192.

10. American Dental Association. Transactions 1952, p. 182.

11. Pillars, F. W. Association testimony on bills relating to the President's health program. J.A.D.A. 48: 697 June 1954.

sons listed in the report on this subject adopted by the Council at its November 1953 session.]

ATTITUDES AND RECOMMENDATIONS OF OTHER AGENCIES

Attitude of the Department of Health, Education, and Welfare on Federal Assistance to States • The secretary of the Federal Department of Health, Education, and Welfare, Mrs. Oveta Culp Hobby, expressed the attitude of her department with regard to grants-in-aid in an address before the Pasadena, Calif., Chamber of Commerce on August 27, 1953.[12] The address said, in effect, that, instead of the former two-thirds, local governments now get less than one-eighth of the nation's tax dollar; that expansion of government activities has been at the state and national levels; that the line of demarcation between local, state and national activities has become blurred, and that there is an overlapping of functions at all three levels. Mrs. Hobby concluded that a system of grants-in-aid, properly organized and administered, could assist the states to meet their obligations and prevent the transfer of these functions to the central government.

The Commission on Inter-Governmental Relations • One of the purposes of the recently established Commission on Inter-Governmental Relations is to make studies into the objectives of grants-in-aid programs and the extent to which federal activities have advanced into fields which are the primary interest and obligation of the states and their political subdivisions. The Commission was created by the first session of the 83rd Congress and is expected to start formal operation in 1954.

Recommendations of the Association of State and Territorial Health Officers on Grants-in-Aid • A committee on grants-in-aid of the Association of State and Territorial Health Officers, after reviewing "ten voluminous documents on the subject," noted[13] that there had been a steady drop in Public Health Service grants to states for public health as compared to similar grants made to states by the Children's Bureau; that there had been no proportional reduction of programs operated by the Public Health Service itself, except in tuberculosis control, and that there was a definite trend toward greater allocations for special projects, such as research.

At its November 1953 meeting, the association recommended that:

> . . . there should be no further reduction in the federal grants for health to states until the Commission on Inter-Governmental Relations has submitted its report and recommendations to Congress. Any changes in grants at that time should permit a period of adjustment to enable the state health departments to present budgets to their legislatures, many of which meet only every two years.

Regarding appropriations for specific health programs, the association recommended that the budget format for the Public Health Service and the Children's Bureau:

> . . . should be revised to conform to the broad categories of public health such as environmental health and sanitation, chronic diseases, infectious diseases and health education. . . . That while budgetary needs in public health can be expressed in broad categories they must be changed occasionally to cope with outbreaks of disease or other public health emergencies. Authority is needed to transfer funds between major categories so that health officials can best accomplish their broad objectives of protecting the health of the people.

Reasons cited in the transactions of the association's November 1953 meeting as to why state health authorities believe

12. Hobby, Oveta Culp. The federal-state partnership. An address before the Pasadena (Calif.) Chamber of Commerce, Aug. 27, 1953. Washington, D. C. Mimeographed by Department of Health, Education and Welfare, 1953.

13. Association of State and Territorial Health Officers. Report of federal relations committee. Transactions of the Association, Nov. 1953.

federal grants-in-aid are necessary included (1) that federal grants-in-aid provide a democratic substitute for direct national action in the field of health, prevent centralization and progressively strengthen the health programs of states and localities; (2) that the protection of the public health is a joint federal, state and local responsibility, that the federal government contributes knowledge, funds and leadership and stimulates the development and maintenance of high quality public health services—indirect services that are matched by the direct services of state and local health departments in every community regardless of size; (3) that, since research, pilot studies and demonstrations of the federal government are of little value except through the medium of state and local health services, it is incumbent on the federal government to continue to share the cost of state and local health services; (4) that federal financial assistance is a powerful force in overcoming inertia and in keeping standards of service high, and that federal grants-in-aid help to equalize financial ability among states of high and low income, stimulate and make possible the demonstration of public health programs in the states and their subdivisions and make research findings and other scientific knowledge available on a nationwide basis.

NEED FOR GREATER STIMULATION OF STATE APPROPRIATIONS

The Association's "Dental Health Program for the Community, State and Nation" states that:

> . . . whenever possible, local funds should be utilized for the institution and maintenance of community programs. In cases where funds are inadequate for this purpose, state and, if necessary, federal funds may be sought. The appropriation of local, state and federal funds should be in keeping with the magnitude of the dental health program.[8]

It is generally recognized that funds for dental health at all levels of government are entirely inadequate and not "in keeping with the magnitude of the dental health problem." The responsibility for appropriation of these funds, however, rests first with the community, then the state and the federal government.

The appropriation of funds at the state level is necessary to enable the state health departments to conduct necessary studies and to give technical assistance to communities that will enable them to conduct locally-sponsored programs. At the present time, the budgets of dental units in most state health departments are composed, to a large extent, of federal funds and the total funds budgeted rarely are sufficient to permit competent state dental health directors to conduct a program consistent with the needs of the states and consistent with the type of activity recommended by the Association.

Obviously, the ability and responsibility of state governments to appropriate state money for dental health programs must be emphasized, and state dental societies can lend considerable leadership in bringing this important responsibility to the attention of appropriate persons and groups within the states. One example of this type of leadership is exemplified in Tennessee as described in the following paragraphs from an editorial in the August 1953 issue of THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION:[14]

> Tennessee is to be heartily congratulated and openly envied because of a decision recently made by its legislators and public health officials. Their eyes opened by the state dental society to the prevalence of dental defects among children and their pride piqued by the implied negligence of the condition, the state authorities have given appropriate status and financial support to their public dental health program. Under the new plan, effective July 1, the state dental unit was raised from its former subordinate position to one of major rank; the director of the division was made responsible directly to the State Com-

14. Tennessee points the way in public health dentistry. Editorial. J.A.D.A. 47:220 Aug. 1953.

missioner of Public Health; and $300,000 of state funds was appropriated for public health dentistry during the present biennium.

Of equal significance is the fact that Tennessee recognized its own responsibility in the fight against disease and willingly and fully assumes that responsibility—financially and otherwise—instead of pleading for funds from federal sources.

Tennessee has demonstrated an understanding of one of her health problems and an independence in solving it that might well be emulated by each of her sister states.

SUMMARY

1. The federal government can assist in the improvement of dental health through the support of dental research relating to the cause, prevention and methods of treatment of dental diseases, and through the provision of grants-in-aid funds and technical consultative assistance to the states for the purpose of developing and maintaining community dental health programs.

2. The American Dental Association's recommendations for federal grants-in-aid to assist states in community dental program activities began as early as 1940 and these recommendations have been repeated in several official actions since that time.

3. The Association considers federal grants-in-aid as an acceptable method of assisting in the financing of state and local dental health programs when the right of the states and communities to adapt programs to meet their own needs is safeguarded.

4. The Association has recommended that federal grants-in-aid be earmarked for dental purposes, because experience has demonstrated that general grants-in-aid funds are not automatically allocated within the states in keeping with the magnitude of the dental health problem in those states.

5. The direct administration by the federal government of the topical fluoride demonstration program during the years 1948-1952 did not follow the principle that states should have the right to administer their own programs.

6. The secretary of the federal Department of Health, Education, and Welfare has stated that the states should have federal financial assistance, but that the states also should have considerable freedom in the administration of federal funds and should seek for greater state support of their own programs.

7. The Association of State and Territorial Health Officers believes that federal grants-in-aid are a highly important component in the financing of state health programs. The health officers state that some flexibility in categorical grants is necessary so that adjustments would be possible that would permit emphasis to be placed on problems particular to the individual states.

8. There is an urgency for state-level appropriations for dental health programs, and state dental societies should lend leadership in the obtaining of financial support for the state's dental health program.

9. The Commission on Inter-Governmental Relations has been established recently, and it will study and make recommendations regarding federal grants-in-aid to states for all purposes, including health.

10. The reasons why federal grants-in-aid for dental health programs are a necessary adjunct to state support for such programs are summarized as follows:

a. Federal grants-in-aid are a well-established method of supporting state health programs and are acceptable when the right of the states to determine and administer their respective programs is safeguarded.

b. Federally administered programs within the states tend to relieve the local community and the state health authorities of their full share of responsibility in health matters, and they meet resistance; therefore, the result is a weakening of the intended desirable effects of such programs.

c. The provision of categorical grants-in-aid funds for other diseases have stimulated the allocation of state funds on a matching basis, as well as stimulated the interest of health officials in a more concentrated attack on those specific diseases.

d. Federal grants-in-aid help to provide benefits among the states on the basis of need rather than on the basis of available money within the state.

e. The value of the federal government's research lies in the application by the state and local health services of the findings, and the federal government can assist and stimulate the states' utilization of the results of this research by sharing the cost of state health services.

f. The use of federal grants helps to assure that efficient and economical public health methods, research findings and other scientific knowledge will be applied on a nation-wide basis in the combatting of dental diseases.

g. The grants-in-aid method for the utilization of federal funds allows for local determination of needs and for local administration of the services to meet that need.

h. Since grants-in-aid funds are allocated on a matching formula basis, the services offered to the public within a state are more likely to be consistent with the state's financial resources to meet the obligations it has assumed.

i. From a realistic point of view, it appears that, in many instances, states are unable to provide fully for their public health services on state money alone, even though considerably more attention must be given to the appropriation of state funds.

RECOMMENDATIONS

State dental societies should be more cognizant of their responsibilities and of the opportunities for the improvement of their state dental health programs and implement this by:

1. Insisting on the appointment of capable directors of the dental units in the respective state health departments.

2. Securing an administrative status for the state's dental unit that will give the dental director full administrative responsibility for the professional dental aspects of his program.

3. Promoting the appropriation of sufficient state funds earmarked for the conduct of a dental health program commensurate with the magnitude of the state's dental health problems.

Conference on dental health education

The Council on Dental Health sponsored a conference on dental health education on January 25-26, 1954, with representatives of 16 national health and educational organizations taking part.

The purpose of the two-day conference was to review the problems of the dental health education programs in the nation's schools and to seek methods by which these programs could be improved and the dental health education services of the American Dental Association be made more effective.

Leading the discussion of administrative problems in school dental health education, was Mr. Angus R. Rothwell, superintendent of schools in Manitowoc, Wis., who represented the American As-

sociation of School Administrators. He pointed to the administrator's many possibilities and the lack of time in which to fulfill them as the main problem in dental health education. In the discussion that followed, one of the principal needs in the entire field was emphasized; namely, that dental health education must be a responsibility shared by school administrators, teachers, parent-teacher and service organizations, health departments, health councils and dental societies. By cooperation, a more effective program can be achieved, and such problems as lack of information, lack of coordination, lack of time and availability of material can be successfully worked out.

CLASSROOM PROBLEMS

Miss Elizabeth Sowell, of Detroit, representing the Department of Classroom Teachers of the National Education Association, led a discussion regarding the problems of classroom teachers in dental health education. One of these problems was a lack of knowledge on the part of teachers of where information and teaching materials can be obtained. Two possible answers offered were better health education preparation in teachers colleges plus in-service training, and central sources of curriculum materials in the schools. It was found that in many schools dental health education is taught as an isolated feature, rather than as an integral part of the general curriculum.

Health education in the school curriculum does not enjoy the status of other courses. Often there is a lack of time, lack of space and lack of instructional material. Many times health instruction is literally squeezed in where nothing else can be offered, and is taught without credit. Consequently, when budget, time or personnel problems make cutbacks necessary in the curriculum, the health courses usually are the first to suffer. Teachers feel discouraged about carrying on under such conditions as these. Pupils, likewise, are quick to see the lack of interest in health instruction on the part of curriculum planners.

In answer to a question as to whether written tests to discover the effectiveness of dental health education were available, it was stated that the real test of such education is in the condition of the child's mouth. On the question of interruptions in the class routine by the system of excuses from school for dental appointments, the conferees agreed that where this problem was felt to be troublesome, advance notice of such appointments could be required so that the teacher might plan the classwork accordingly.

CURRICULUM PLANNING

The area of dental health education and the curriculum was surveyed by Dr. John Sternig, assistant superintendent of the Glencoe, Ill., public schools, representing the Association for Supervision and Curriculum Development. There was general agreement that the curriculum should be planned by the teachers who are to apply it. In the case of dental health education, this should be done in consultation with the local dental society, which could furnish the accurate scientific information that the teacher would not ordinarily possess. It was learned that in many schools there is a curriculum committee which reviews materials submitted for use in the classroom.

Intellectual content plus application to a real life situation familiar to the child was seen as necessary in the development of a curriculum, with the child's own dental condition as an effective starting point for a dental health education program. The educators agreed that dentists and dental hygienists as resource people are invaluable in the planning and carrying out of a dental health education program. In the classroom, they should always act as auxiliary to the teacher, never in place of her.

As a source of information and aid in planning, conferences on dental health education sponsored by state and local dental societies are an important link in the chain of cooperation, as are dental surveys conducted in schools. An even more direct role of the dentist was mentioned in this connection; namely, that the family dentist is the usual source of dental health information in his personal contact with patients. The pediatrician, the conferees agreed, has in most cases neglected his dental health education responsibilities in his influential position with parents.

PARENT-TEACHER COOPERATION

The remedying of one of the most serious problems in education of the child—the lack of cooperation between home and school—was described as the role of the parent-teacher associations by Dr. Henry Helmholz of the emeritus staff of the Mayo Clinic, Rochester, Minn., who represented the National Congress of Parents and Teachers. The parent-teacher organization, as a member of the community health council, holds discussions with parents on the dental health problems of children. The decision was made by the National Congress of Parents and Teachers to focus its efforts on one aspect of health for promotion, and it chose fluoridation of water supplies. In addition, this group helps sponsor topical fluoride application programs and dental health education programs in schools. In 1951 the National Congress of Parents and Teachers went on record as urging a ban on the sale of sweets in schools.

DENTAL SOCIETY AS CONSULTANTS

William Jordan, of Minneapolis, chief of the Section on Dental Health of the Minnesota State Department of Health, representing the Association of State and Territorial Dental Directors, led a discussion on the ways in which the dental society can contribute to the school dental health education program. Dr. Jordan stressed the idea expressed by the entire conference that the dental society can be of greatest help at the resource level in cooperative planning of dental health education programs, in providing consultation and factual material rather than in taking the initiative in such programs.

The dental society was described as the logical sponsor of workshops and conferences on dental health education and of in-service training programs at the state and local level for teachers' preparation in dental health education. The educators also pointed out that the authority of the American Dental Association behind dental health material and information was an effective lever in putting across a dental health education program.

SCHOOL EXCUSES FAVORED

Mr. Perry J. Sandell, of Chicago, director of the Division of Dental Health Education of the A.D.A. Council on Dental Health, opened the discussion regarding excuses from school for dental appointments. The conference agreed that the main problem in this area was to coordinate released-time appointments with classwork in order to insure a minimum of interruption of classwork and of loss of important classtime by the pupil. A solution to this problem was seen in the planning of such appointments in advance and the notifying of teachers of upcoming appointments. The educators present remarked that many teachers prefer released time in the afternoon rather than in the morning because of the heavier morning schedule in the schools.

The point was made also that the dental appointment itself has educational value, and that the time lost from classwork is negligible. There was some disagreement as to whether the parents' and dentist's signatures should be a requirement for a pupil to be excused for a

dental appointment. Some said it showed a lack of trust in the parents, the dentist and the child, while others felt the signatures were needed for administrative purposes. Abuse of released time was brought up as a potential problem. The school people agreed that there might be some abuse, but that in most communities the system was not enough used, rather than abused. It was the opinion of the conferees that in a community where it is difficult for children to obtain dental appointments during out-of-school hours, a satisfactory plan for excusing children from school for dental care usually can be worked out.

TEACHING AIDS NEEDED

In the discussion of instructional aids for dental health education, the over-all problem as seen by the educators and dentists was the correlation of educational materials with teaching. The basic philosophy agreed on was that materials should implement the child's own experience in dental health as in all other areas of his life. A film-strip library and curriculum materials center that would be available to the classroom teacher were suggested as desirable. Cooperation by dental societies and educational organizations was called for so that educationally sound and scientifically accurate materials would be produced.

A.D.A. MATERIALS

The school dental health education materials prepared and distributed by the American Dental Association had been reviewed by the participants before coming to the conference. It was generally agreed that, with few exceptions, the material was educationally sound and of considerable value. The booklets which found the greatest acceptance with the educators were: *Dental Health Facts for Teachers, Frank Visits the Dentist* and *Everybody Smile*. The "Elementary School Posters" were also considered excellent teaching aids.

The Association materials that were criticized as being of questionable value in the school program were the *Daredevil Davey* comics and the coloring leaflets for first and second grade children. Although it was pointed out that children's comics are here to stay and that the *Daredevil Davey* comics are well written and drawn, the educators preferred other types of material for school use. It was suggested that the coloring leaflets violate some of the principles of art development, and that they are merely "busywork" and of little value in teaching dental health. A lack of good and sufficient material for younger children was noted by the school people, who urged that the Association devote more of its energies to this area.

The educators were in general agreement that dental health plays, skits, puppet shows and posters are of greatest value if pupils produce their own.

It was suggested that television offers wide opportunities for dental health education that should be explored by dental societies and educational groups.

DENTISTRY-TEACHER LIAISON

In the discussion of channels of communication between the dental profession and the schools, the educators urged better promotion by the American Dental Association of its dental health education materials. Advertisements and announcements in educational journals were suggested as a means to this end, in addition to dental health education conferences and workshops. Representatives of the Association pointed out that advertisements in educational journals had been used formerly but were discontinued because of small returns. On this point the educators said they favored timely notices of material available, with the needs of teachers kept central, rather than straight advertisements.

BUREAU OF LIBRARY AND INDEXING SERVICE

Additions to the Library

The books listed here have been added recently to the Library collection. Requests for this material, available on loan to all members of the Association, should be addressed to the Bureau of Library and Indexing Service. There is no charge for borrowing books. Most of the books may be purchased also through the library.

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The American Dental Association Film Library

The film reviewed herein is included in the Film Library collection of technical films now being circulated among dental societies, dental schools, dental study clubs, hospital dental staffs, military personnel and other accredited professional dental groups. It may be rented from the Film Library for $2.50. Since the number of prints is necessarily limited, it is suggested that program chairmen plan their programs far enough in advance to insure availability of the film.

FILM REVIEW

Cysts • 16 mm., color, sound, 1,033 feet, 30 minutes. Produced in 1952 by S. Daniel Seldin, D.D.S.; Harry M. Seldin, D.D.S., and William Rakower, D.D.S. Procurable on loan ($2.50) from the American Dental Association Film Library, 222 E. Superior St., Chicago 11, and for purchase from S. Daniel Seldin, 57 W. 57th St., New York.

This film demonstrates the removal of dentigerous and radicular cysts *in toto*, and also the treatment of a cyst by a modified Partsch operation. Roentgenograms, followed by intraoral photographs of the patient, show a mandibular cyst in the lower jaw that extends from molar to molar. The teeth involved in the cyst are removed carefully, leaving the occlusal ridge of the alveolar bone intact for future prosthetic replacement. After the cyst has been enucleated and the embedded cuspid removed with forceps, the cavity is examined for cyst remnants and other debris. The tissues are sutured, and roentgenograms are taken postoperatively and again at intervals of 6 and 18 months to show the regeneration of bone.

The next case shows the enucleation of a radicular cyst where the antrum is involved. The operation is similar, and roentgenograms are taken postoperatively and at intervals of 3 and 6 months. Those taken at three months reveal a normal sulcus and no further bulging of the right maxilla; those taken at six months show that the missing teeth have been replaced by a fixed bridge.

The balance of the film is devoted to a discussion and demontration of the conservative treatment in cyst removal which helps to keep teeth vital. Through the modified Partsch operation, the cyst is opened from the outside and is kept open by the insertion of a plastic plug. According to the producer, this technic aids in the shrinkage of the cysts. Surgery can then follow without endangering the teeth. Roentgenograms which were taken postoperatively and at intervals of 3 and 6 months show the cyst area filling with new bone. Several additional cases are shown.

This film is well organized and photographed. Each step is discussed thoroughly which makes the film suitable for use in teaching. Dental societies, hospital dental staffs, and military personnel may find it stimulating program material. It should also interest general practitioners, oral surgeons, endodontists and maxillofacial surgeons.

COUNCIL ON DENTAL RESEARCH

Change in A.D.A. Specification No. 6

The following is a notice of change in A.D.A. Specification No. 6 for Dental Mercury. Paragraph V-2 should be changed to read "Mercury shall be packed in clean, clear glass containers (or in containers made of polyethylene*)." The change is effective immediately.

*The provision included in parentheses is new. It permits plastic containers.

List of Certified Dental Materials: addition and deletion

Since the publication of the most recently revised list (revised to November 15, 1953, J.A.D.A. 47:693 Dec. 1953), the following material which conforms to the American Dental Association Specification No. 6 for Dental Mercuries has been added:

CERTIFIED DENTAL MERCURIES
(A.D.A. SPECIFICATION NO. 6)

Mercury	*Manufacturer or distributor*
Mowrey Mercury	W. E. Mowrey Company

The A.D.A. Research Fellowship, National Bureau of Standards, has been advised by the manufacturer of the following material that they no longer manufacture this product and, therefore, it should be eliminated from the List of Certified Dental Materials:

CERTIFIED INLAY CASTING INVESTMENTS
(A.D.A. SPECIFICATION NO. 2)

Investment	*Manufacturer or distributor*
Security Improved Inlay	The Cleveland Dental Mfg. Co.

JUDICIAL COUNCIL

Ethics

SOUVENIRS IMPRINTED WITH THE DENTIST'S NAME

Question • May a dentist purchase balloons or candy suckers imprinted with his name to give to his child patients?

Reply • This would be in distinct violation of the Association's *Principles of Ethics*. In addition to this we feel that it would be undignified and unbecoming to a dentist to do this. He might intend to keep such souvenirs for his own patients, but he would soon be accused of using such means to gain patients for himself.

We call your attention to Section 12 of the *Principles of Ethics* entitled "Advertising," which states this very clearly as follows: "The dentist has the obligation of advancing his reputation for fidelity, judgment and skill solely through his professional services to his patients and to society. The use of advertising in any form to solicit patients is inconsistent with this obligation because it reflects adversely on the dentist who employs it and lowers public esteem of the dental profession."

Judicial Council

A TECHNIC FOR TOOTH SECTIONING

By James Springer, D.M.D., Washington, D. C.

The removal of an erupted molar tooth by sectioning is the method of choice in those instances where preoperative diagnostic roentgenograms indicate the possibility that complications may develop during extraction.

Sectioning is indicated when the following conditions are present: widely divergent roots; one or more sharply curved roots; roots wth bulbous hypercementosis; one or more roots in the antrum; a crown extensively involved by caries, with roots encased in a thick alveolus; roots with screw-shaped anatomy or torque; and similar anatomic anomalies.

If such conditions exist, any attempt to remove the teeth in one piece by the use of forceps or elevators alone usually will prove ill-advised. Such teeth, when subjected to pressure, generally fracture and then usually at an undetermined level and angle. The operator subsequently is forced to resort to a tissue flap operation in order to excise the roots from their bony compartment. If roots of the upper molar teeth extend into the antrum, there is the possibility that the floor of the maxillary sinus will be ruptured. There is the added danger that the fractured root will disappear within the sinus.

A carefully planned operation for removal of such teeth by sectioning not only reduces the likelihood of inflicting excessive trauma on the surrounding tissues; it also eliminates the psychic shock both to the patient and to the operator which inevitably results from unanticipated surgical procedures.

The following case illustrates the conditions which indicate removal by sectioning and the technic which should be employed in the removal of an erupted, nonfunctioning, firmly-seated lower right third molar. The patient was a white man, 37 years old.

1. The roentgenograms revealed that the apical third of the mesial root had a distal curvature of 45 degrees and the apical third of the distal root a curvature of 90 degrees. Two millimeters of interradicular bone separated the middle third of the roots below the bifurcation. The mandibular canal was about 1 mm. below the root apexes. There was an area of bone rarefaction distal to the tooth in the retromolar triangle region (Fig. 1, left).

2. Under conduction anesthesia of the regional nerve supply, a curved scalpel freed the buccal and lingual interdental papillae of the second bicuspid and molar teeth. A straight scalpel was placed in the distal gingival crevice of the third molar and extended back horizontally for 1 cm. in a distolateral direction toward the anterior border of the ascending ramus of the mandible. This in-

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Captain, Dental Corps; oral surgery section, dental service, U. S. Army Dispensary, The Pentagon.

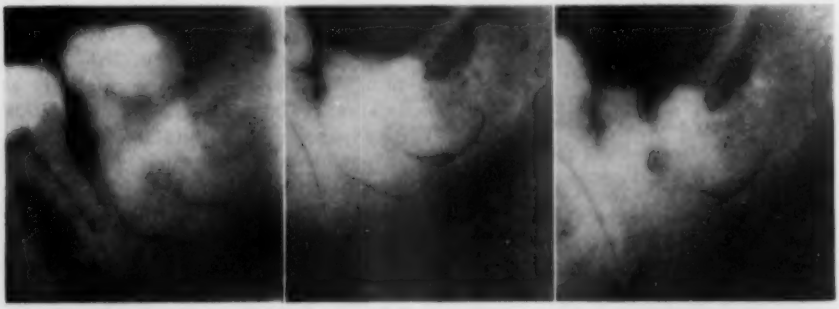

Fig. 1 • Left: Lower third molar with distal curvature of both roots. Center: Buccal bone "moat" established. Section and removal of crown. Right: Section and separation of mesial root from distal root through bifurcation

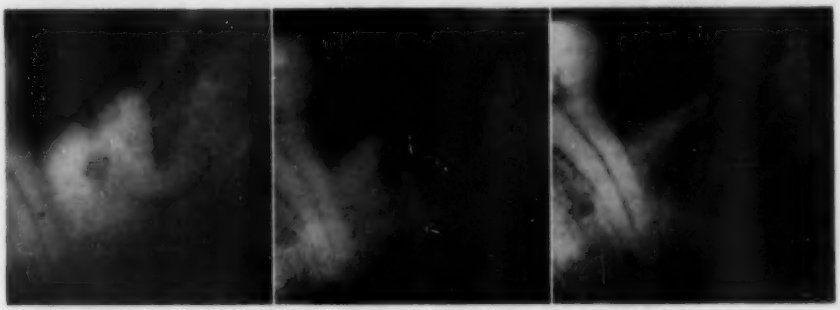

Fig. 2 • Left: Accidental loss of mesial root height. Removal of bone covering distal surface of distal root down to its curvature. Center: Removal of distal root from socket. Right: Removal of mesial root and débridement of socket

cision avoided possible injury to the lingual nerve and vessels which might have been encountered if a medially inclined incision had been made.

With a periosteotome, the buccal mucoperiosteum was dissected from the alveolar bone from the second bicuspid to the posterior incision. The lingual mucosa was reflected from the neck of the third molar only. The flap was retracted by a periosteotome in the left hand of the operator and held firmly against the bone.

3. On its buccal surface, the cementoenamel junction of the crown was found to be at the level of a dense external oblique ridge. Buccal bone was removed by a small hexagonal-shaped bur in a straight handpiece that was revolved alongside the roots of the third molar. It produced a shallow "moat" 2 to 3 mm. in depth between the bone and the tooth. This proceeding requires great care if the integrity of the buccal bone immediately distal to the second molar is to be maintained.

4. A forceps was applied to the neck of the tooth and rotated without force in all directions. This motion tends to free the roots from their periodontal membrane attachments, and thereby facilitates their later elevation.

5. From the buccal surface of the cementoenamel junction, a carbide crosscut fissure bur in a straight handpiece cut the tooth along its horizontal axis through the pulp chamber. It was not necessary to cut the crown completely through to its lingual surface, since if this had been done, the bur might accidentally have traumatized the lingual alveolar bone. A straight spear-shaped elevator was inserted deep within this incision, and with a slight twist the crown was separated from the roots and removed (Fig. 1, center).

6. A carbide crosscut fissure bur in a contra-angle handpiece was placed in the pulp chamber and worked buccally through to the moat and lingually to a point short of the alveolus. It was then worked downward to the bifurcation of the roots and beyond it to remove part of the interradicular bone. The same elevator was inserted deep in this incision, and with a slight twist the two roots were separated (Fig. 1, right).

At this point a premature attempt at elevation of the loose mesial root fractured off 2 to 3 mm. of its tooth structure, and thereby better access for its later elevation was sacrificed.

7. With the crown removed, the distal bone was accessible to a carbide crosscut fissure bur in a contra-angle handpiece. The bur was held parallel to the distal surface of the distal root and was worked downward, thus removing the bone covering the root as far down as the curvature of its apical third (Fig. 2, left).

8. A right-angle elevator was placed deep in the vertical incision between the two roots and rolled distally, displacing the distal root back out of its socket (Fig. 2, center).

9. The same elevator was placed in the moat at the mesiobuccal angle of the mesial root and rolled distally. This movement somersaulted the mesial root back out of its socket into the space created for it by the now empty distal root socket.

10. The socket and the mucoperiosteum were inspected for loose bone and tooth spicules. All remnants of inflammatory granulation tissue and follicular tissue were curetted out. The buccal bone margin was freshened with a large round antrum bur, the socket was irrigated, and a roentgenogram was taken

to ascertain that the flap was ready for suturing (Fig. 2, right).

11. Black silk sutures were used to close the posterior incision and to approximate the buccolingual interdental papillae. The mucosa was massaged to stimulate the blood to fill in the open socket. A piece of gauze sponge was folded over the wound in such a fashion that, when the jaws were closed, the mucosa was molded against the buccal bone.

12. The patient received a single prophylactic intramuscular injection of 600,000 units of penicillin G procaine in aqueous solution. He was advised to use cold applications the rest of the day and to start warm saline soaks the following day. The sutures were removed on the fourth postoperative day. The patient was dismissed with instructions in the home use of a curved-tip water syringe for hygienic care of the wound. Healing was uneventful.

CONGENITAL ECTODERMAL DYSPLASIA

By the Strong-Carter Dental Clinic, Honolulu, T. H.

A seven and one half year old Japanese boy was referred to the Strong-Carter Dental Clinic in Honolulu on December 12, 1952. Two deciduous maxillary second molars were the only teeth which had ever appeared.

Clinical examination showed a fairly well developed and nourished boy. Hair and eyelashes were sparse; eyebrows were missing. His eyes appeared to be hypersensitive to bright light. The child's skin was dry and scaly with a loss of pigment in some areas. Oral examination revealed only the presence of deciduous maxillary right and left atypical second molars, with occlusal carious lesions in both teeth. Oral hygiene was fair and oral mucosa normal.

Lateral cephalometric roentgenograms of the head showed an apparently normally developed skull, maxilla and mandible, with no tooth buds present. No alveolar process existed except around the deciduous maxillary second molars.

Diagnosis was subtotal anodontia due to congenital ectodermal dysplasia.

Cavities were prepared in the deciduous maxillary second molars and the two teeth were restored with silver amalgam. Plastic maxillary and mandibular dentures were constructed. Stainless steel wire buccal clasps were incorporated in the maxillary denture.

The dentures were inserted on January 21, 1953. After subsequent adjustments were made to the periphery of the dentures over a period of two months, the patient was dismissed.

It was recommended that the dentures be reconstructed at periodic intervals as the growth and development of the face and jaws took place. No apparent difficulty was encountered by the patient in wearing the dentures and there was noticeable improvement in esthetics and in the functions of mastication and speech.

LON W. MORREY, D.D.S., EDITOR
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THE Journal OF THE AMERICAN DENTAL ASSOCIATION

Editorials

Inclusion of dentists in OASI up to the Senate

On May 24, in secret session, the Ways and Means Committee of the House of Representatives, by a vote of 15 to 10 dissected medicine out of the health professions, and for the purpose of Old Age and Survivors' Insurance isolated physicians, interns and student nurses from other members of the health team. On June 1, it completed its operation by securing from the House of Representatives a "gag rule" which prohibited the rejoining of the severed member by employment of an amendment on the floor of the House. Later the same day, the House passed H.R. 9633, the bill in question, by a vote of 355 to 8. Under the bill, now before the Senate Finance Committee, physicians are excluded from OASI coverage and taxes, and dentists and other members of the health professions are included.

In taking this action, the House of Representatives, a group chosen in the same manner as the Association's House of Delegates, repudiated the idea of representative government by denying the right of the elected delegates of American dentistry to speak for the dentists who chose them for that task, ignored the official statement of the Association explaining its policy and substituted the judgment of twenty-five nondentists of the Ways and Means Committee for the judgment of the Association

delegates who, last fall for the fourth consecutive time, voted against the inclusion of self-employed dentists under OASI.

These are the steps taken by the Association to present its views. On April 9, last, J. Claude Earnest, vice-chairman of the Council on Legislation of the Association, testified on the subject to the Ways and Means Committee of the House of Representatives.[1] He pointed out that since dentists, except in unusual cases, continue to work throughout their entire lifetime, they cannot derive old age benefits from their contributions to this social security scheme. Consequently "they prefer to be omitted from it so that they can invest their funds in retirement plans of their own choice from which they will receive, at least, the return of their investment."

On May 25, E. Harold Gale, chairman of the Council on Legislation,[2] again protested vigorously to the Ways and Means Committee of the House of Representatives because of the disregard which the Committee accorded dentistry's request to be excluded from involuntary coverage in OASI.

On June 1, Representative George S. Long, of Louisiana,[3] himself a dentist, protested the action on the floor of the House. He deprecated as unjustifiable discrimination the exclusion of physicians and the compulsory inclusion of dentists.

Despite the fact that the Council on Legislation has made every effort to carry out the dictates of the House of Delegates in this matter to the extent that the attitude of the Association is fully known in Congress, it appears that, insofar as the House of Representatives is concerned, dentistry is to be included in the amended Social Security Act. The door is not closed, however, as the Senate still must vote on the issue. It is hoped that the members of that body will deem it inexpedient to pass the bill in its present fish and fowl form.

If dentists find themselves confused because of the manner in which their congressional representatives arbitrarily categorized segments of the health professions, they are no less confused than the congressmen themselves, judging by the Congressional Record of June 1.[4] One representative, voting for the inclusion of dentists, stated, "you cannot take everybody out and make the system work. Somebody has got to be in it and somebody has got to pay in order to make it go." Said another:[5] "We are inconsistent when we attempt to exclude the doctor of medicine and include doctors of dentistry. . . . Why not exclude both of those closely related professions?" Said still another:[6] "Certainly dentists, if they are not entitled to coverage or do not want to be included will have an . . . opportunity to express their viewpoint to the Finance Committee of the Senate."

The members of Congress may rest assured that the advice given in the last quoted excerpt will be followed. Not only the Senate Finance Committee but all members of the Senate will be made well aware that the majority of dentists do not wish to be included in OASI; that dentists, as a group, do not retire until from three to five years after they could apply for OASI benefits; that dentists cannot retire and live on the maximum OASI benefit plus $1,000 a year which they might be permitted to earn from employment; that dentists prefer to invest for their old age in sound investments which, however small, will still permit them to supplement the difference between the return and their needs with earnings from their professional skill.

1. Council on Legislation. Association testifies on OASI. J.A.D.A. 48:565 May 1954.
2. Page 90 of this issue.
3. Page 90 of this issue.
4. Congressional Record, June 1, 1954, p. 7024.
5. Congressional Record, June 1, 1954, p. 7028.
6. Congressional Record, June 1, 1954, p. 7031.

Metropolitan New York: site of first community-wide voluntary prepayment dental insurance plan

The announcement on May 19 of the establishment in New York City of a voluntary prepayment dental insurance program marks the successful culmination of some two decades of intensive study and gives to the First District Dental Society of the State of New York the distinction of being the first dental society to activate a community-wide voluntary prepayment dental insurance program in the United States. The plan, which is offered by a nonprofit organization known as Group Health Dental Insurance, Inc., has the approval of both the New York State Department of Insurance and the First District Dental Society of the State of New York. The Board of Social Welfare of the State has approved the organization. The objective of the program as explained by Bissell B. Palmer, originator of the plan and president of Group Health Dental Insurance, Inc., is to bring complete dental services within the reach of a large part of New York City's population which is not now receiving such care. Full details of the pilot program are published on page 111 of this issue of THE JOURNAL.

Members of the dental profession, particularly members of Councils on Dental Health, will watch the progress of this pioneer venture with interest and envy as New York has done what no other community as yet has been able to do; it has transferred from blueprint to production stage a dream that has been in the minds of many men for many years. More than fifteen years ago Dr. Palmer himself outlined a plan for voluntary dental insurance. In 1942 the Council on Dental Health of the American Dental Association initiated a study of prepayment plans as a method of financing dental care. In 1945 the Council recommended the establishment of experimental dental service programs and formulated basic principles for their guidance. In 1949 the House of Delegates of the Association recommended that dental societies inaugurate voluntary experimental prepayment plans for dental service so that, through actuarial data, the unknown factors of a prepayment system as they are related to dental care may be ascertained. A number of dental societies, stimulated by the actions of the Council on Dental Health and the recommendation of the House of Delegates, endeavored to establish or have established a prepayment dental program within their community but because of seemingly insurmountable obstacles—financial, legal, and others—none of the ventures materialized except that of New York.

The First District Dental Society of the State of New York and the administrators of this experimental program are to be congratulated on the understanding, vision and tenacity which have enabled them to surmount the many barriers so far laid in their path. It is to be hoped that barriers in the future will be less formidable and that this pioneer venture, so long in the making, will shortly prove its worth and provide actuarial facts on which to base voluntary dental insurance programs in other parts of the country.

Science vs. fanaticism: a report of the hearing on the Wier bill to prohibit fluoridation

Claire Danziger, Chicago

An imposing array of scientific talent assembled in Washington May 25 for a three day hearing on a bill (H.R. 2341) pending in Congress to prohibit fluoridation of public water supplies throughout the United States. The hearing was conducted by the Committee on Interstate and Foreign Commerce of the House of Representatives, headed by Congressman Wolverton (R., N.J.).

Lined up against some of the nation's leading research scientists were the current ringleaders against the health procedure, whose irresponsible charges have circulated freely in many communities.

Reliable information indicated there was general disapproval of the bill by the congressmen, and the measure appeared destined to die in committee. Here are some high lights of the hearing.

Sixteen witnesses, including scientists who had conducted research on fluorides for several decades, appeared to testify against the Wier antifluoridation bill. Notably absent from the hearing rooms while the scientific testimony was presented were most of the opponents of the health procedure, who left in a mass exodus after their portion of the hearing was completed. Many of these witnesses carried their own gallon jugs of water to avoid "contamination" from the District of Columbia's fluoridated water supply. Some were highly emotional and, at one point, a squad of Capitol police had to be summoned to the committee room.

Seventeen witnesses sought favorable action on the bill. They presented the usual collection of charges against the health program, ranging from claims that it was mass medication to a "communist plot." They said fluorides were "the worst poison known to man," increased dental decay rather than prevented it, caused severe corrosion of water pipes, and were an "inorganic, artificial" substance totally distinct from "natural fluorides."

Representative Wier (D., Minn.), who had introduced the bill, disclaimed any special interest in the measure. Representative Wier explained that he had presented the bill at the request of a limited number of people from his own community of Minneapolis.

From Minneapolis at the hearing was Mrs. Peder P. Schmidt, who told of taking up residence in Washington 17 months before in order to persuade the congressman to introduce the bill and "save the country."

"Fluoride has been used for the destruction of a large part of Europe," she testified. "Fluoridation is the crime of this millennium, destroying America's human strength."

Three congressmen appeared to testify on the value of the health program. Senator Hunt (D., Wyo.), only dentist member of the Senate, pointed out that the procedure has been approved by virtually every reputable health organization in the country and added: "Great scientific agencies would not recommend a measure in any way harmful."

At this point, the American Dental Association received a tribute from Representative

Assistant director, Bureau of Public Information, American Dental Association.

Priest (D., Tenn.) for "its attitude in the public interest." Representative Priest, a member of the committee said, "I think dentists deserve a great deal of credit for their unselfish efforts. I think the A.D.A. deserves a pat on the back."

The second congressman, Representative Long (D., La.) who has practiced dentistry 50 years, described the scope of dental disease.

"Why is the dental profession interested in fluoridation," he said. "Even if you multiplied the number of dentists by ten in the next ten years we could not hope to make a start in meeting the dental decay problem."

Representative Ford (R., Mich.), whose district includes the city of Grand Rapids, where fluoridation was begun in January of 1945, said, "The program has been highly successful in Grand Rapids, and it is almost incomprehensible to me that a local community would be precluded from making the decision for itself."

A first-hand account of the program in Grand Rapids, one of the oldest in the country, was given by two officials of the city. George W. Welsh, city manager, reported that fluoridation had long been taken for granted.

William Leslie Harris, superintendent of the city's water department, described operation of fluoridation equipment. "In the course of water treatment practice, there are at least 30 different chemical agents which are used in amounts varying from the small amount identical with fluoride application to quantities a hundred times or more greater," he said. Mr. Harris said further that in ten years of operation, there had been no effect on the water pipes or any other part of the distribution system.

As to whether fluorides could accumulate in pipes and suddenly release a lethal dose—a question posed by Representative Pelly (R., Wash.)—Mr. Harris said that daily analyses are made of the water. "We have always been able to find the amount of fluoride at the end of the main to be the same as at the beginning," he said.

Also testifying on the safety of equipment operation was David Auld, of Washington, a director of the American Water Works Association, who emphasized that addition of fluorides to a water system "is an operation involving no unusual procedures or equipment."

The American Dental Association was represented by E. Harold Gale, chairman of the Council on Legislation, H. Trendley Dean, secretary of the Council on Dental Research, and J. Roy Doty, secretary of the Council on Dental Therapeutics.

Dr. Gale read a letter from George F. Lull, M.D., secretary and general manager of the American Medical Association, explaining the A.M.A.'s endorsement of the fluoridation procedure.

"I can say that the American Medical Association endorses fluoridation of public water supplies," the letter from Dr. Lull said. "Gerald Smith and many others have twisted the words around because of the fact that in one action of the House of Delegates the word 'principle' was used. No matter what words were used, the endorsement is that public water supplies should be fluoridated in order to prevent dental caries in children."

In other testimony, Dr. Dean, former director of the National Institute of Dental Research, described studies of the dental effects of fluorides in the water supplies carried on in many parts of the world, beginning in 1901.

The dental scientist, who is internationally known for his 20 years of research on fluorides, said studies show that adults who have lived since infancy in communities containing fluorides in the water supply have about 65 per cent less dental decay and 65 per cent less loss of teeth than persons in fluoride-free areas.

Dr. Dean also emphasized that to call fluoridation mass medication was scientifically unsound.

"Fluoridation is not a treatment for dental caries," he said. "Dental caries is a nonhealing lesion; dental enamel once injured never repairs itself with or without medication. Fluorine simply prevents the decay from developing."

Dr. Doty, a biochemist and physiologist, dealt sharply with the persistent myth that fluorides found naturally in water supplies can be distinguished from fluorides added to a water system. Earlier, Charles A. Brusch, M.D., of Cambridge, Mass., who was listed as director of the Cambridge Medical Center, had contended that sodium fluoride added to water is different from "natural" calcium fluoride which he described as an organic fluoride.

"No competent chemist would refer to calcium fluoride as an organic compound," Dr. Doty said.

As for "controlled versus naturally fluoridated water," he said, there was "unanimous agreement among chemists that the fluoride ion and its effects are identical no matter from what source it is derived."

Representative Pelly, whose home city is Seattle, questioned Dr. Doty about the contention that fluoridation in certain industries contaminates products.

"Effects on industries were given early con-

sideration even before pilot studies on fluoridation were started," Dr. Doty said. "Breweries, bakeries and other industries have studied this subject. We know of no industry that will be adversely affected."

Representative Pelly also asked about the possibility of putting fluoride in milk "to keep from imposing on people who don't want it."

"We have no demonstration that the addition of fluorides to milk will have the same effect as fluorides in water," Dr. Doty said. "We do know that water is the only vehicle demonstrated to be a safe and effective method for providing dietary fluorides. The amount of water consumed by an individual is more nearly constant than any other food."

Appearing for the U. S. Public Health Service were John W. Knutson, D.D.S., chief dental officer; Isadore Zipkin, M.S., Ph.D., senior scientist at the National Institute of Dental Research, and Nicholas Leone, M.D., Ph.D., M.P.H., chief of medical investigations at the Institute of Dental Research.

Dr. Zipkin, a biochemist, brought out the point that practically all foods contain some fluorides and reported on a number of studies indicating that even with fluorides in water at levels four to five times greater than that advocated for caries prevention, there was no effect on bone development or fracture experience.

Dr. Leone reported on a ten year study, begun in 1943 in Bartlett, Texas, where fluorides occur naturally in the water supply at levels of 8 ppm. The control community was Cameron, Texas, with 0.4 ppm of fluoride in the water system. Included were 237 persons, ranging from 15 to 68 years at the beginning of the study.

At the onset of the investigation, each individual received a thorough medical and dental examination. The clinical examinations and laboratory tests were repeated in 1953.

Dr. Leone, reporting on the findings for the two groups, said that ". . . it is clear that the only difference attributable to the excessive fluoride exposure is dental mottling in Bartlett."

In another study, consisting of microscopic and chemical analyses of bone and soft tissues taken at autopsy from persons who had ingested as much as 8 ppm of fluoride in water over a prolonged period, no detectable changes in structure nor impairments of function were found, he said.

In addition "the work of other investigators indicates that no soft tissue changes are observed even after prolonged ingestion of 300 times the amount of fluoride regarded as optimal for caries prevention," Dr. Leone reported.

Further studies were reported by Francis F. Heyroth, M.D., Ph.D., associate professor of industrial toxicology and assistant director of the Kettering Laboratory in the College of Medicine, University of Cincinnati. Studies on fluorides have been conducted for more than 20 years at Kettering.

Dr. Heyroth said four kinds of evidence point to an "ample margin of safety" for fluoridation. He described these as experimentation on animals, studies of humans, epidemiological studies of the health of residents of communities served by water supplies bearing excessive fluorides and the results of medical examinations of workmen exposed to fluorides in industry.

Another witness testifying on the safety of the fluoridation procedure was Wallace D. Armstrong, M.D., Ph.D., of Minneapolis, professor and head of the department of physiological chemistry at the University of Minnesota Medical School.

Dr. Armstrong, who has been engaged in the investigation of chemistry and metabolism of fluorides since 1933, cited his own studies to repudiate any claims of a relation of fluorides and cancer. He also disposed of the "rat poison" charge.

"Misunderstandings have arisen in discussions of fluoridation of water owing to the fact that very large amounts of fluoride are toxic," he told the congressmen. "When sodium fluoride is employed as a rat or cockroach poison, the dry and nearly pure compound is used. The aim is to produce acute lethal fluoride intoxication in the vermin, a circumstance which would require an impossibly large intake of fluoridated water. In water fluoridation, the fluoride compound is highly diluted to one part of fluoride in a million parts of water."

The first witness in favor of the bill to forbid the health procedure was Claude N. Palmer of Washington, appearing as a director of the National Committee Against Fluoridation. Under questioning, Mr. Palmer said his group was made up of "about 275 members."

Also speaking for the group were Mrs. Vera Adams, president, and Vincent Kleinfeld, both of Washington. Mr. Kleinfeld, who was counsel for the Delaney Committee (a committee of the 82nd Congress, which considered fluoridation), said he was now counsel for the antifluoridation group and described the fluoridation procedure as "mass medication without parallel."

The charge was echoed by an official representative of the Christian Science denomination which for the first time was openly recorded as against the fluoridation program.

In a statement, James Watt of Washington said he represented the "mother" church in Boston and its 3,000 branch churches. He quoted a decision by a district judge in Shreveport, La., holding that fluoridation was mass medication.

(Six days after Mr. Watt testified, the Louisiana Supreme Court reversed the Shreveport court's decision and held that the fluoridation procedure could not be construed as mass medication. See page 104.)

Two physicians, in addition to Dr. Brusch, appeared to oppose fluoridation. Leo Spira, M.D., of New York City, said he came to the United States in November of 1951 "to help in the fight against chronic fluorine poisoning." Dr. Spira charted the usual list of ailments attributed to fluorides, including "fits of depression," early baldness and pyorrhea. He also persisted in the outdated contention that aluminum pots and pans, which contain a fluorine mineral, contaminate food.

The hearing room was blanketed with tracts on such subjects as "Does Aluminum Kitchenware Cause Cancer?" and "Early Grave via Modern Kitchen."

The third physician, Frederick B. Exner, of Seattle, who said he took "dental x-rays in the private practice of radiology" described as "a tissue of fallacies" the section on elements in nutrition in the widely accepted ***Handbook of Nutrition*** of the American Medical Association.

Three dentists appeared, including Max Ginns, of Worcester, Mass., senior dental consultant to Worcester City Hospital, who said that contrary to studies, "in natural fluoride areas, tooth decay is just as prevalent as anywhere else," Charles T. Betts, of Toledo, who said "fluoridation does not prevent decay; it does just the opposite," and Paul Manning, of Springfield, Mass., who deplored the existence of water fluoridation in the capital and, in a hushed tone, solemnly warned the congressmen, "Don't soak your bodies in Washington bath water, because if you do, the unalterable effects of fluoridation will come upon you. You will become violent."

At this point, Dr. Betts rose and shouted, "Senator Taft died after drinking this water for a year. Justice Vinson lies buried in Kentucky. Many senators and representatives have gone."

Excerpts from other testimony were: Mrs. Hugo Franzen, San Francisco, "Agents of Malenkov now at liberty in the United States are giving this poison to our children"; Miss Lillian Van de Vere, Hartford, Conn., who described herself as a bacteriologist, serologist and biochemist, "The only true benefit to be derived from fluoridation is its antiseptic quality as a mouth wash, which can well be obtained by rinsing the mouth with any other antiseptic solution"; Konstantin K. Paluev, Pittsfield, Mass., an electrical engineer, "Fluoride aggravates dental decay"; Mrs. Arthur R. Robinson, Seattle, "Honest practitioners of naturopathy, chiropractic and other drugless healing do not lack for patients; their offices are filled with those who are looking away from the drugs and synthetic chemicals. It is only under the Kremlin, the Nazis or the Fascists that such schemes as water fluoridation could be expected to be found."

Dentists and Social Security

The United States Senate is considering a bill which would bring dentists, but not physicians, under the Social Security Act. A letter from E. Harold Gale, chairman of the Association Council on Legislation, was sent to the House Ways and Means Committee, protesting the inclusion of dentists under OASI. On June 1, Congressman George S. Long of Louisiana, a dentist and member of the Association, spoke on the House floor in support of the Association's position. Congressman Long made the speech at the request of the Council on Legislation. The letter and the speech are printed below.

Hon. Daniel A. Reed, Chairman
Ways and Means Committee
House of Representatives
Washington, D. C.

Dear Mr. Reed:

On behalf of the American Dental Association I wish to protest vigorously the action of the Ways and Means Committee in disregarding the request of the dentists of America to be excluded from involuntary coverage in Old Age and Survivors' Insurance. As Doctor Earnest told your committee, our House of Delegates has considered this question five times and on each of the last four occasions turned it down. The last vote in the House of Delegates was 312 to 64 against the inclusion of self-employed dentists.

Considering this continuous record of opposition to inclusion under the system by the dentists, it is impossible to understand how your committee could have arrived at the conclusion that physicians should be excluded, but dentists should be included.

If it is at all possible, I request that you accord the same consideration to the request of the American Dental Association as you apparently have to that of the American Medical Association.

Sincerely yours,

E. Harold Gale, Chairman
Council on Legislation
142 Washington Avenue
Albany, N. Y.

CONGRESSMAN LONG ON DISCRIMINATION UNDER OASI

Mr. Chairman, I want to call to the attention of the House today at least one discrimination contained in the bill H.R. 9366, outlining the proposed Social Security Act amendments of 1954. I am sure that it will be of interest to every member of this body. For in the section of the bill covering self-employed professional persons, the committee acceded to the expressed wishes of doctors by making them the sole exception to coverage among self-employed professional persons.

Doctors [sic] did not want coverage, and the committee honored their wishes in the matter. Dentists did not want coverage, but they were covered by the bill. Now I am confident that there is one major reason why the wishes of dentists did not prevail with the committee, and that is because members of the Association did not attempt to overwhelm them on this point with letters from all over the country, since their position was clear from the statement of their authorized representative, who appeared before the committee. I am equally confident that the Senate will be fully informed by member dentists when the bill reaches that body for consideration. For, as you know, the bill is to be considered by the House under a closed rule and will go to the Senate without amendment.

A man from my own state, Dr. J. Claude Earnest of Monroe, La., appeared before the Ways and Means Committee on April 9, 1954,

to oppose coverage of dentists. Dr. Earnest, I might add, is a member of the House of Delegates of the American Dental Association and vice-chairman of its Council on Legislation. Because his testimony indicates so conclusively that the opposition of the Association is firm and considered, I insert it in full in the Record. It makes clear that for more than six years the Association has studied the matter openly and with full participation on the part of some 93,000 member dentists throughout the country. The opposition to coverage under Social Security on the part of dentists, then, is a grass roots opposition, based on full knowledge of their own particular needs as they relate to the Social Security System.

Dentists are opposed to coverage under Social Security, among other reasons, because of the particular conditions of their profession. For example, self-employed dentists do not normally retire but continue to practice well beyond the normal retirement age until they die. The average age of death of dentists is 65 years, and those who survive longer do not retire until the average age of 68. This means that the average dentist will be required to pay into a system from which he will never receive any benefits, and as a self-employed person, he will pay one and one half the amount of the tax contribution paid by the average employed individual. For dentists, as for doctors, coverage under the system would mean payment of taxes—scheduled to rise from the present 3 per cent to a high of 4⅞ per cent by 1970—often without any return to them except for a lump sum payment upon death.

Dentists want to be omitted from Social Security so they can invest their funds in retirement plans of their own choice from which they will receive at least a return upon their investment. On behalf of the dentists of this country, and especially those of my own state and region, who are violently opposed to inclusion, I call this matter to the attention of the House today, confident that the matter will be adjusted equitably before those amendments are finally enacted.

In speaking today I am speaking as a representative of the American Dental Association.

The House of Delegates of the American Dental Association meets something like our Congress here. It appoints committees. Those committees take up various subjects, consider them and report them back to the House of Delegates where they are debated by men from every state in the Union. They come to some conclusion as to what they think should be done for the best interest of the dental profession.

This subject has been before the House of Delegates four times. Each time they have considered it, they have voted that they do not want to be included in this program.

I cannot see, for the life of me, why the committee would put one group of doctors under social security, then take another group out. A dentist is a doctor just as much as is a physician, only his treatment is confined to the mouth. He operates, he gives treatment, he does everything that it is necessary to do so far as the teeth and the mouth are concerned, the oral cavity. Why, then, would you take a doctor, who is an M.D., out of this program just because he asks to be taken out, then when the dentists come before you with their representatives and ask you to take them out, you refuse to do that?

This idea of retirement has little to do with it, in my opinion. Very few dentists, in the really strict term, ever retire. Some of them go back to their homes. Maybe they do a little work there and make almost as much money as they did when they were in actual practice, but the majority of dentists over this country do not want to be included in this. That is 80 per cent of the dentists who are practicing dentistry in the United States of America. Surely that group should be able to speak for the large portion of dentists involved.

I know there are doctors who want to be in the program; I know there are dentists who want to be in the program; I know there are farmers who want to be out; I know there are those who want to be in, so we have to take the majority of those people and govern ourselves according to the desires and the wishes of the majority of the particular profession or trade. When 80 per cent of the dentists have faith in their Congress, in their meetings, and state that they do not want to be included in this program, why, in good judgment, cannot the Congress take them out?

I am making these remarks hoping that someone in the Senate will look further into this matter, and that we will be able to take the dentists out of the program, and let them go along with the rest of the doctors.

While I realize that there are some repetitions in my discussion, they were made for the purpose of emphasis.

I thank you very kindly.

[The Congress here inserted the testimony of Dr. J. Claude Earnest.]

Washington News Letter

Federal financial support of medical research probably will set a record in the new fiscal year, with dental research conspicuously excepted. By the end of June or early in July, Congress was scheduled to complete action on the U. S. Public Health Service budget for the year beginning July 1. It was virtually certain that new dollar highs would be enacted for cancer, heart, mental and other investigative fields. All signs pointed to a research budget in excess of 78 million dollars, of which no more than $1,740,000 would be devoted to dental health activities.

Major items earmarked for dentistry are $660,000 to finance USPHS projects of technical assistance to the states, principally in connection with fluoridation, $620,000 for National Institute of Dental Research and $221,000 for research grants-in-aid. Only $50,000 has been allocated for research fellowships.

Rep. John E. Fogarty (D., R.I.) made it clear that he is sympathetic to the idea of providing federal support more commensurate with the problems presented by dental diseases. It was mainly through his efforts that the House approved $1,740,000 (the same amount that was appropriated for the 1953-54 fiscal year), rather than the $1,730,000 which was recommended by the White House.

ADEQUACY OF FUNDS

Representative Fogarty's interest in this subject is illustrated by the questions which, in the course of Appropriations Committee hearings he put to Francis A. Arnold, Jr., director, National Institute of Dental Research. Following are some of the questions and answers:

Fogarty, "I note that the $50,000 for research fellowships will support about five new applicants. Is this number adequate?"

Arnold, "Four or five new applicants receiving research fellowships each year is only a partial answer to the nation's shortage of qualified dental research workers. The $50,000 appropriated each year for the past five years has enabled us to grant fellowships to less than half of the qualified applicants. Approximately 95 per cent of those who have completed their fellowships are pursuing careers in research and teaching. To the extent that funds are available, this program is doing a very effective job of augmenting the nation's limited supply of dental researchers."

Fogarty, "You are requesting a slight increase in funds for direct, or intramural, research, the amount being about $46,000. Part of this increase is to support clinical dental research in the new Clinical Center. Is this increase adequate or are there important areas in dental research which are being neglected?"

Arnold, "Approximately $11,000 of the $46,000 increase will be used for extending clinical research by providing support for three new positions. This will permit a small expansion of our research on periodontal disease and cleft lip and palate. A broad research attack on periodontal disease would include fairly expensive research, concerned with cellular physiology, histochemistry and enzymology, and broad-scaled epidemiological studies. Cleft lip and palate is the most frequent of congenital defects, occurring once in 800 live births. Nevertheless, studies concerned with the growth and developmental pattern of the tissues involved studies in genetics, and studies concerned with the complex treatment of this condition have been very limited."

Representative Fogarty also questioned Dr. Arnold on what the U. S. Public Health Service is doing, or can do, to gather information and focus attention on problems of dental education and training. In this connection, the witness stated that the number of dental practitioners is lagging behind growth in population.

"Improving the utilization of the existing supply of dentists is largely a matter of changing dental practices," he declared. "In this field, the Public Health Service can conduct research into such matters as the organization of dental practice, to determine, for example, how and in what numbers auxiliary workers can best be used, and whether group practice promises better utilization of specialists' services. By giving widespread publicity through the professional journals and other channels to the results of these and similar studies, the Public Health Service can promote the more effective use of a limited dental manpower supply."

HILL-BURTON AMENDMENT

In mid-June on Capitol Hill, observers continued to hold to the view that amendment of the Hill-Burton hospital construction act would be the only piece of major health legislation enacted into law before adjourn-

ment. This bill, authorizing $60,000,000 a year for the next three years to stimulate nationwide construction of hospitals for chronic disease, nursing homes, rehabilitation facilities and treatment and diagnostic centers, passed the House in March and was favorably reported a few weeks ago by the Senate Labor and Public Welfare Committee.

The Senate committee made a significant change in the measure. In defining "diagnostic or treatment center," the House made no allowance or provision for professional dental care. The definition was altered to read:

". . . . in which patient care is under the professional supervision of persons licensed to practice medicine or surgery in the State, or, in the case of dental diagnosis or treatment, under the professional supervision of persons licensed to practice dentistry in the State."

Enacted by Congress without dissent was the Department of Defense bill which authorizes the military establishment to utilize —in their professional capacity—as enlisted men such physicians and dentists who decline or who are disqualified for commissioned rank.

The House Armed Services Committee, in its report of indorsement, stated its feelings and intent with reference to the legislation, as follows:

"The Committee . . . unanimously recommends enactment of the proposed legislation for it will prevent an individual physician or dentist from escaping military service by merely claiming the privilege of the Fifth Amendment. Obviously, the armed services will not commission an individual who refuses to answer questions concerning his loyalty, but there is no reason why this individual who, having chosen not to answer these questions, should not, nevertheless, be required to serve, as thousands of loyal physicians and dentists have served, and are now serving.

"If upon investigation the physician or dentist is found to be a communist, or is a dangerous security risk, then he may be administratively discharged as undesirable."

ASSOCIATION PROTESTS OASI FOR DENTISTS

On July 6, J. Claude Earnest, vice-chairman of the Council on Legislation, will appear before the Senate Committee on Finance to protest against the inclusion of dentists in OASI. Under the present bill (H.R. 9366) as passed by the House under a gag rule prohibiting amendments, coverage for dentists was provided, but physicians, interns, student nurses, policemen and firemen were excluded.

The action of the House Ways and Means Committee in including dentists was protested earlier by E. Harold Gale, chairman of the Council on Legislation, in a letter to Committee Chairman Reed (R., N.Y.). Congressman George Long (D., La.), himself a dentist, protested the House action in a speech from the floor. (See page 90.)

Congressional action was completed June 17 on the Veterans Administration budget. Under a House-Senate compromise, $11,200,000 was allotted for fee-basis, outpatient dental care. Veterans must apply for care within one year after service discharge or by the end of 1954, whichever date is later.

Association views on the Veterans Administration outpatient dental care program were presented to the House Veterans Affairs Committee by Francis J. Garvey, secretary of the Council on Legislation, June 10. Mr. Garvey urged passage of H.R. 7653, introduced by Representative Frelinghuysen (R., N.J.). H.R. 7653 would require that veterans file application for treatment within one year after date of discharge or July 27, 1954, whichever is later. Treatment under the outpatient program would be limited to a single series for a proved service-connected disability.

Appropriations for dental research in the U. S. Public Health Service were increased by $10,000 in a House action, bringing the total appropriated for the National Institute of Dental Research to $1,740,000, the same amount provided last year. In testimony before the House and Senate Appropriations Committees, the Association urged an increase of $409,000 over the current budget for dental health activities. The House-passed bill provides record sums for research by all the Institutes of Health, except for the Institute of Dental Research.

Passed by both House and Senate, but vetoed at the White House, was a bill to give medical and dental care to former employees of the old Lighthouse Service, now absorbed by the Coast Guard. In vetoing the bill, the President said that it would discriminate among federal employees and would set "an unfortunate precedent."

The House passed and sent to the Senate H.R. 303, transferring the Indian Health Service from the Department of Interior to the USPHS. The bill at press time had been reported to the full Senate.

Awaiting presidential signature at press time was the amendment to the doctor-draft law permitting the utilization in a professional capacity—but as enlisted men—those physicians and dentists who do not qualify for commissions.

REQUESTS FOR MIAMI HOUSING CONTINUE HEAVY

A total of 3,934 applications for housing for the Association annual session were filled as of June 11, the Housing Bureau reports. The heavy advance registration indicates that the 95th annual session, to be held in Miami, Fla., November

8-11, will be one of the best attended in the Association's history.

In addition to the meetings of the House of Delegates and the scientific program, a program of entertainment has been planned. The president's dinner is scheduled for Wednesday evening, November 10, at the Hotel di Lido. The various fraternities are planning banquets for Monday evening, November 8. The Alpha Omega banquet is at the Delano, that of Delta Sigma Delta at the San Souci, Psi Omega's at the Algiers and Xi Psi Phi's at the McAllister.

A one hour concert by the University of Miami Symphony Orchestra will precede the general meeting on Tuesday, November 9. It has been reported that tremendous interest is being shown in the postconvention trips planned by the various travel agencies.

A few vacancies still exist in the scientific exhibits. Those persons wishing to exhibit should contact Donald Washburn, director of the scientific exhibits, at the Central Office. Persons wishing to present table clinics should apply to Walter J. Monia, chairman of the committee on table clinics, also at the Central Office.

OUT-DATED X-RAY FILM BEING SOLD, COUNCIL WARNS

The Council on Dental Trade and Laboratory Relations last month issued a warning that some out-dated x-ray film is being sold. The Council reported at its meeting held June 13 and 14 at the Central Office that government surplus film, sold for scrap, has been distributed as new film by at least one dental supply house in New York. The film is also being sold in California.

After a conference with officials of the Office of Supply Services of the federal government, Frederick W. Herbine, Council chairman, said that steps were being taken to prevent further distribution of out-dated film.

LESTER HUNT, DENTIST MEMBER OF SENATE, DIES

Lester C. Hunt, the only member of the dental profession to serve in the current session of the Senate, died June 19 in Washington, D. C. Only recently he had announced that he would not seek reelection for a second senatorial term because of ill health.

Lester C. Hunt

Senator Hunt established an impressive record for himself both in dental and legislative circles. During his term of office in the Senate he played a leading part in legislation dealing with health and particularly dental matters. He was one of the principal authors of the doctor-draft bill, and he worked successfully for legislation which provided equalization pay for members of the medical and dental corps in the armed services. In May he appeared before the House Interstate and Foreign Commerce Committee to testify against the Wier antifluoridation bill.

In 1953 Senator Hunt was awarded the highest honor within the power of the American Dental Association to give —honorary membership in the Association. The award read in part: "Senator Hunt, in his capacity of governor, senator and member of the dental profession, has

rendered distinguished service to his state, to dentistry and to his country."

Senator Hunt was born in Isabel, Ill., July 8, 1892, and was graduated from St. Louis University, College of Dentistry, in 1917. Shortly after establishing an office in Lander, Wyo., he joined the United States Army, serving as a lieutenant in the Dental Corps. His political career began in 1932 when he was elected to the Wyoming House of Representatives. He served as secretary of state for Wyoming, 1934-42, and as governor 1942-48 when he was elected to the United States Senate. He served as president of the Wyoming State Board of Dental Examiners from 1924 to 1928 and president of the Wyoming State Dental Society in 1926. He was a member of the American Dental Association, American Legion, Masonic Order, Psi Omega fraternity, Rotary and the American College of Dentists.

He is survived by his wife, Emily, and a son and daughter. Friends were requested by the family to omit flowers, but those wishing to pay their respects to Senator Hunt were asked to do so by contributing to the American Dental Association Relief Fund.

J. Roy Doty, secretary of the Association Council on Dental Therapeutics (left), receives a distinguished alumni award from Robert W. Gibson, president of Monmouth College, at commencement exercises held in Monmouth, Ill., June 8.

MONMOUTH HONORS J. ROY DOTY, COUNCIL SECRETARY

J. Roy Doty, secretary of the Association Council on Dental Therapeutics, received a Distinguished Alumni Award from Monmouth College at commencement exercises held in Monmouth, Ill., June 8. The honor was conferred by Robert W. Gibson, college president.

Dr. Doty was graduated from Monmouth College in 1927 and was an instructor in chemistry at Monmouth for several years. He received a Ph.D. from the University of Illinois where he also taught.

Senior chemist for the Association from 1943 to 1948, he became director of the Bureau of Chemistry in 1948 and secretary of the Council on Dental Therapeutics in 1949. Dr. Doty has achieved world-wide recognition as an authority on dental therapeutics. In recent years he has appeared before many civic groups as an authority on the fluoridation of community water supplies. He was one of the Association representatives in Washington at the recent hearings on the Wier antifluoridation bill.

VETERANS' BENEFITS APPROVED FOR DENTAL STUDY PROGRAMS

Veterans enrolled or wishing to enroll in dental internships and residency programs leading to preparation for examination by specialty boards approved by the Council on Dental Education of the A.D.A. may receive benefits under Public Law 550 as a result of revisions in the law

announced by the Veterans Administration in June. The internships and residency programs must be those approved by the Council on Dental Education. Previously regulations did not authorize the awarding of benefits to dental interns.

Lists of the internship and residency programs approved by the Council have been forwarded to the regional offices of the VA.

ASSOCIATION SECRETARY AWARDED FONES MEDAL

The Council on Postgraduate Studies and Awards of the Connecticut State Dental Association has conferred the 1954 Alfred C. Fones award on Harold Hillenbrand, Association secretary. Dr. Hillenbrand, in Europe for the meeting of the World Health Organization, was unable to attend presentation ceremonies at the Society's annual meeting June 3. Lon W. Morrey, Association editor, accepted the award for him. The Fones award is given each year by the Connecticut Association to an individual who has made an outstanding contribution, either of a theoretical or technical nature, to the dental profession.

GEORGE B. DENTON ELECTED TO OMICRON KAPPA UPSILON

George B. Denton, Association research consultant on nomenclature, has been elected to honorary membership in the Alpha (Northwestern University) chapter of Omicron Kappa Upsilon, honorary dental fraternity. The presentation of the key was made June 2. Dr. Denton was honored for his contributions in the field of dental education.

Previous to his appointment as research consultant, Dr. Denton was professor of dental literature and history at Northwestern University Dental School, where he taught for 33 years. An outstanding contributor to dental literature, he has conducted several conferences on nomenclature under the auspices of the Association Bureau of Library and Indexing Service.

WALTER C. MCBRIDE NAMED TO JOURNALISM COUNCIL

Walter C. McBride of Detroit has been named by Association president, Leslie M. FitzGerald, to the Council on Journalism. Long a contributor to dental literature, Dr. McBride is president of the American Association of Dental Editors. Previously he was editor of the *Michigan State Dental Association Journal* and the *Journal of Dentistry for Children*. Dr. McBride's contributions to the literature include a textbook in his special field, pedodontics, a field in which he was a pioneer.

LESLIE FITZGERALD AWARDED HONORARY DEGREE BY LOYOLA

Leslie M. FitzGerald, Association president, received an honorary degree of doctor of science from Loyola University in New Orleans June 5. Dr. FitzGerald was the principal speaker at the commencement program and the only person

A committee welcomes Leslie M. FitzGerald, Association president, to Loyola University in New Orleans June 5. Seated (l. to r.) are: Frank J. Houghton, dean of Loyola University School of Dentistry; Dr. FitzGerald; Alvin Dumestre, New Orleans Dental Association president; standing (l. to r.) are: Charles Keller, president of the dental school's Alumni Association; Allen Copping, president of Xi Psi Phi at Loyola, and Moffre R. Matte, president-elect of the New Orleans Dental Association.

to be awarded an honorary degree at the ceremonies. He was cited for his outstanding contributions to dental education.

The Very Rev. W. Patrick Donnelly, S.J., president of the university, in making the award, stated, "The man we honor tonight belongs to a band of dedicated educators. He has always been interested in dental education at its highest, but especially in its development on a postgraduate level, has ever been a prime mover in founding and advancing associations devoted to this task."

Leslie M. FitzGerald (left), Association president, receives the diploma of honorary Doctor of Science from the Very Rev. W. Patrick Donnelly, S.J., president of Loyola University, at commencement exercises in New Orleans June 5.

A.D.A. RESEARCHER APPOINTED TO NATIONAL COMMITTEE

Robert J. Nelsen, research associate for the Association at the National Bureau of Standards, has been appointed official A.D.A. representative on the main committee of the National Committee on Radiation Protection according to a recent announcement by Harold Hillenbrand, Association secretary.

The National Committee on Radiation Protection is sponsored by the National Bureau of Standards. Its function is to make recommendations for safety standards to be observed by persons whose work brings them in contact with radiation of different kinds.

The Committee is composed of representatives from the following organizations: the American College of Radiology, the American Radium Society, the Na-

Representatives of the American Dental Association and the American Medical Association met with officials of the National Association of Radio and Television Broadcasters during the latter group's convention in Chicago in late May. Shown (l. to r.) are: George F. Lull, M.D., secretary and general manager of the A.M.A., Harold Fellows, president of the N.A.R.T.D., Lon W. Morrey, editor of the A.D.A. Journal, and Federal Communications Commissioner Robert T. Bartley.

tional Bureau of Standards, the Radiological Society of North America, the U. S. Atomic Energy Commission, the American Medical Association, the American Roentgen Ray Society, the National Electrical Manufacturers Association, the U. S. Air Force, the U. S. Army, the U. S. Navy and the U. S. Public Health Service.

ACCREDITATION OF SCHOOLS ANNOUNCED BY COUNCIL

A number of dental education and dental hygiene education programs were accredited by the Council on Dental Education at its meeting held May 29 in the Central Office.

The four year dental education program of the School of Dentistry, University of Southern California in Los Angeles, and of the School of Dentistry, University of North Carolina in Chapel Hill, N. C., were given full approval. Robert W. McNulty is dean at Southern California. John C. Brauer is dean of the school at North Carolina.

Full approval was given to the two year dental hygiene program at the University of Southern California at Los Angeles, to the two year program at Long Island Agricultural and Technical Institute at Farmingdale, Long Island, to the program at the University of Kansas City in Kansas City, Mo., and to the program at West Liberty State College in West Liberty, W. Va.

Provisional approval was given to the dental hygiene program at Erie County Technical Institute in Buffalo. The first year of the two year dental hygiene program at the University of North Carolina also was approved. This program is new and its first class is just completing the first year of study.

ASSOCIATION A SPONSOR OF WORLD HEALTH CONFERENCE

The American Dental Association was among organizations which assisted the National Citizens Committee for the World Health Organization in sponsoring the Midwest Conference on World Health held in Chicago June 10 and 11. The purpose of the conference was to inform the public about world health work.

Speakers at the conference dinner pointed out that "the United States contribution toward improved world health is not an expenditure but an investment." United States aid, they said, has made many friends for this nation all over the world.

Sponsors of the conference, in addition to the A.D.A., included the American Nurses' Association, the American Public Health Association, the National Tuberculosis Association and the United States Public Health Service. Stanley D. Tylman, former chairman of the Council on International Relations, represented the dental profession at the conference.

LEO KREMER, RELIEF COUNCIL CHAIRMAN, DIES

Leo W. Kremer, chairman of the Association Council on Relief, passed away May 26 at the age of 60. Dr. Kremer gave distinguished service to the dental profession for many years.

He served the Chicago Dental Society at various times in the capacity of treasurer, secretary and president. He served the Association as chairman of the Committee on Scientific Exhibits in 1947 and 1948. In 1948, also, he served as chairman of the Local Arrangements Committee for the Association's annual session held in Chicago that year.

Leo W. Kremer

Dr. Kremer was elected first vice-president of the Association in 1949. In 1950 he became a member of the Council on Relief, and in 1951 assumed the Council chairmanship. Under his chairmanship in 1953, the $100,000 Relief Fund goal was reached for the first time since the Fund was founded. In 1954 the goal was again reached—and in record time.

He served in World War I as a captain in the Dental Corps.

Dr. Kremer was a member of Delta Sigma Delta, Omicron Kappa Upsilon, the American College of Dentists and the Odontographic Society of Chicago.

He is survived by his wife Alice, his sisters Mrs. William Gotz, Mrs. Bernie Madison and Miss Josephine Kremer, and his brother Lawrence Kremer.

M. C. HANSEN APPOINTED CHAIRMAN OF RELIEF COUNCIL

Association president Leslie M. FitzGerald has appointed M. C. Hansen chairman of the Council on Relief to fill the vacancy in that post created by the death of Leo W. Kremer, it was announced June 4. Dr. Hansen was formerly secretary of the Relief Council. Also appointed to the Relief Council was William O. Vopata of Oak Park, Ill. Dr. Vopata's appointment is for the interim period ending with the 1954 annual session during which time he will serve as secretary of the Council.

COUNCIL ON MEMBERSHIP STUDIES SURVEY RESULTS

Forty-one state dental societies of the 48 reporting waive dues for members in the Armed Forces on a limited tour of duty, according to results of a survey discussed at the May 24 meeting of the Council on Membership held in the Central Office. Only eight societies said they charge full dues for these Armed Forces members.

Other findings of the survey were the following. In 26 societies student members pay less than regular dues in the first calendar year after graduation. In 42 societies, to be eligible for active membership dentists must be licensed in the state. In seven, to be eligible dentists not licensed in the state must be licensed in another state.

Copies of the survey results may be obtained from the Council on Membership at the Central Office.

DENTAL HEALTH CONFERENCE TO CONSIDER STATE PROGRAMS

What dental services should state health departments provide? How should state dental directors assist in community programs? To what extent should federal money be used? Why does dentistry need

a top level administrative position in the state program?

These are among the questions which will be discussed at the national dental health conference of the Council on Dental Health which will be held in Miami November 6 prior to the Association's annual session.

A letter sent to constituent societies by the Council urges that dentistry "give strong and enlightened leadership" in the dental health field and to help achieve this goal requests that the societies plan to be represented at the annual conference.

Participants in the program will include Donald J. Galagan of the United States Public Health Service; Carl Sebelius, dental director of the Tennessee Department of Public Health; Oren A. Oliver, chairman of the public health council of the Tennessee Department of Public Health, J. J. Vaughn, chairman of the legislative committee of the Tennessee State Dental Association; Doyle J. Smith, chairman of the workshop committee of the Tennessee State Dental Association, and Lloyd H. Dodd, member of the advisory board of the Illinois State Department of Public Health.

CONDUCT CONFERENCE ON INDUSTRIAL DENTISTRY

Dental health education in industry is worth while not only in terms of increasing human welfare, but also as a money saving program for the employer. This statement was emphasized at a half-day conference on industrial dentistry which was a feature of the Council on Dental Health meeting held May 17 and 18 at the Central Office. Conferees stressed the need for surveys to demonstrate the effectiveness of industrial dental health education programs.

Other major items on the Council's agenda were the setting up of standards to evaluate the effectiveness of dental care programs, the approval of a recommendation to the Board of Trustees for a change in the pricing and distribution of Association dental health education materials, and a recommendation to the House of Delegates that the observance of Children's Dental Health Day be extended and the name changed to National Children's Dental Health Week.

COUNCIL PLANS LUNCHEON FOR INTERNATIONAL GUESTS

The Council on International Relations is planning a luncheon for international guests at the Biscayne Terrace on Tuesday, November 9, in Miami, Fla., Oren A. Oliver, Council chairman, announced. The Council met May 15 at the Central Office to outline plans for the luncheon. Dr. Oliver said that many guests from the Pan-American countries are expected to attend.

COUNCIL ADOPTS CRITERIA FOR DENTAL LIBRARIES

The criteria to be used by the Council on Dental Education and dental librarians in the evaluation of the effectiveness of dental school libraries were discussed at a meeting held in Washington, D. C., June 12 and 13. Some of the factors considered were: the academic status of the librarian, the services that the library staff renders to the dental school and dental hygiene school, the physical facilities of the library and the factors which must be considered in proposing a budget.

The recommendations of the conference were reported to the Medical Library Association. The Association was informed that the Council on Dental Education would adopt some of the recommendations and would make them part of the requirements for accreditation of the dental schools.

Those attending the meeting were

Helen Hlavec of New York University, Marian Robinson of Maryland University, Minnie Orfanos of Northwestern University, Margaret Palmer of the University of Pennsylvania, Alice McCann of the University of Pittsburgh, Edith Dernehl of Marquette University, Mildred Crowe of the University of Alabama, Margaret Swanson, executive secretary of the American Dental Hygienists Association, Martha Mann of the Bureau of Library and Indexing Service of the A.D.A., Donald Washburn, director of the Bureau of Library and Indexing Service, and Shailer Peterson, secretary of the Association Council on Dental Education.

DENTISTRY REPRESENTED IN SCHOOL HEALTH WORKSHOPS

State dental societies and the American Dental Association cooperated in school health workshops held in Georgia and Kansas last month. A third workshop in which the dental profession is cooperating will take place July 26-30 in Oklahoma.

Shown at the annual meeting of the New Mexico State Dental Society held in Santa Fe, New Mex., May 23-26 are (l. to r.): J. S. Eilar, secretary; W. R. Alstedt, Twelfth District trustee; Leslie M. FitzGerald, American Dental Association president; James P. Byrne, state society president, and De Forest D. Lord, Jr., convention chairman.

Participating in the workshops are teachers, school administrators, health personnel and community leaders. The workshops discuss methods of achieving a better quality of health instruction and ways to improve school health education programs and school health services through effective use of community resources, professional and lay health personnel. Perry Sandell is the Association representative at the workshops.

R. H. FRIEDRICH ATTENDS HOOVER COMMISSION MEETING

R. H. Friedrich, chairman of the Council on Federal Dental Services, represented the Association at a conference arranged by the Full Medical Task Force of the Hoover Commission in Washington, D. C., June 7-10. The purpose of the conference was to discuss the health services administered by the federal government. Two major problems were discussed: Whether the government should administer the various health services which it now administers and whether the health services are being administered in the most efficient manner.

Represented at the conference in addition to the A.D.A. were other health organizations including the American Medical Association and the American Hospital Association.

PARENTS AND TEACHERS HEAR DENTISTRY REPRESENTATIVE

Herbert B. Bain, director of the Association Bureau of Public Information, took part in a panel discussion at the annual meeting of the National Congress of Parents and Teachers held May 24-26 in Atlantic City. The subject of the panel was "The Mainstays of Mental and Physical Health." Mr. Bain spoke on fluoridation of public water supplies.

The panel was moderated by Benjamin Spock, M.D., University of Pittsburgh.

Public Health

NEW DENTAL DIRECTORS NAMED IN TWO STATES

The Alabama and Montana health departments have announced the appointment of new dental directors. W. L. Scholes is the new director of the division of dental hygiene of the Alabama State Department of Health. Dr. Scholes was graduated from the University of Tennessee College of Dentistry in 1951.

Allen T. Willis, former dental director of the Jackson County Health Department in Murphysboro, Ill., has been named dental health director of the Montana health board. He received his dental surgery degree from Northwestern University in 1941 and a Master's degree in public health from the University of Michigan School of Public Health in June.

Harry Strusser

HARRY STRUSSER, PUBLIC HEALTH DENTIST, DIES

Harry Strusser, director of the Bureau of Dentistry of the New York City Department of Health, died May 17. He had been ill with a heart condition for more than a year. Dr. Strusser was 58 years old.

Dr. Strusser's public health activities began in 1922 when he became the director of the dental clinic of the Child Welfare Board in New York. In 1924 he took on the additional duties of director of dentistry for the Yellow Cab Company and director of dental services for the Board of Education.

In 1928 he joined the New York City Department of Health and became head of the Department's dental services in 1930, in which capacity he served until his death.

Dr. Strusser was graduated from New York University School of Dentistry and received a Master of Science degree from the School of Public Health at Columbia University.

Active also as a teacher, Dr. Strusser was special lecturer in dentistry at the Columbia University dental school, special lecturer in community health, Long Island College of Medicine and special lecturer in preventive medicine at the New York University School of Medicine.

CHICAGO CITY COUNCIL APPROVES FLUORIDATION

Fluoridation of water supplies for Chicago, the nation's second largest city, was approved by the City Council in a vote of 37 to 8 June 16. The Department of Water and Sewers was ordered to put the program in operation by January 1, 1955.

Alderman Alfred J. Cilella, a member of the City Council Committee on Health, led the fight for the health measure. The Chicago water system serves 3,600,000 residents of the city and about 500,000 others living in 51 suburbs.

SCIENTISTS TESTIFY ON SAFETY OF FLUORIDATION

The dire warnings and ominous predictions of the National Committee Against Fluoridation were answered by an impos-

ing array of scientists at hearings before the House Interstate and Foreign Commerce Committee in Washington held May 25 to 27. The Committee was considering H.R. 2341, a bill introduced by Congressman Wier of Minnesota to prevent fluoridation throughout the nation. At the conclusion of the hearings, several committee members predicted that the bill would die in committee.

Witnesses opposing the bill and supporting fluoridation included representatives of the country's leading professional health organizations and agencies. Among them were scientists who have conducted research on fluorides for several decades. The many studies proving the safety and effectiveness of fluoridation were described to the congressmen. The charges of "rat poison," "nerve poison," "communist plot" directed at the health measure by the antifluoridationists were also dealt with.

Three organized antifluoridation groups were represented: the National Committee Against Fluoridation, the Massachusetts Women's Political Club and the Christian Science Church. This is the first time that the latter group has been recorded as openly opposing fluoridation.

(For high lights of the hearing see page 86.)

NEW STUDY REAFFIRMS SAFETY OF FLUORIDATION

Further evidence of the safety of fluoridation was published in June by the U. S. Public Health Service. In a statistical study of death rates in 32 cities which fluoridate their water and 32 neighboring cities which do not, death rates from heart diseases, cancer, intracranial lesions, nephritis and cirrhosis of the liver were found to be about the same between the two groups.

The combined death rate from these diseases for the cities using fluoridated water was 1010.6 per 100,000; for the cities with nonfluoridated water, 1005. The cancer death rate was actually lower in the fluoride cities, 135.4 as compared with 139.1 for the nonfluoride cities. The total population of the fluoride group was 896,625; for the nonfluoride group 1,297,500, a sample sufficiently large to be "statistically significant."

COURT DISMISSES SUIT AGAINST FLUORIDATION

The Louisiana Supreme Court on May 31 dismissed a suit to prevent fluoridation in Shreveport. By its action it reversed the decision of a district court which had previously granted a temporary injunction against the city's fluoridation program. In its unanimous decision, the Supreme Court held that fluoridation could not be considered mass medication, and that the city was within its constitutional rights in undertaking the program. It cited the overwhelming support for fluoridation on the part of leading American dentists, physicians and scientists. The Louisiana action has made unanimous the favorable rulings on fluoridation in all eight states where fluoridation has been a court issue.

Meanwhile, further support for fluoridation was reported. The city of Denver, which receives its water supply from two sources, only one of which contains fluorine, will begin fluoridation of the second source. The Association Council on Dental Health announced in June that a total of 936 communities now fluoridate their water supply.

SETBACK TO FLUORIDATION IN SAN DIEGO TO BE FOUGHT

Fluoridation received a setback in San Diego when in a June 8 referendum San Diego citizens voted 46,976 to 41,382 to discontinue the city's fluoridation program. The dental profession and other persons interested in the welfare of the community intend to see that the ques-

tion is brought to a vote again in the next election. The proposition which appeared on the ballot read:

> Shall the ordinance initiated by petition of the required 10% of the registered voters of the City of San Diego prohibiting the fluoridation of the San Diego municipal water supply, be adopted?

Thus persons in favor of fluoridation had to vote no. It is believed that as a result of the wording of the resolution many of those who wanted to continue fluoridation actually voted against it. San Diego has fluoridated its water supply since 1952.

FIRST FLUORIDATION PROJECT IN MISSOURI UNDER WAY

On May 26 Richland (population 1,400) became the first community in Missouri to inaugurate a fluoridation project. The program also serves the suburb of Hillhouse Heights.

In ceremonies marking the occasion, scrolls were presented to the city by James R. Amos, M.D., director of the Missouri State Division of Health, and by David W. Brock, president of the Missouri State Dental Association and chairman of the American Dental Association's Council on Dental Health.

Dental Education

BENJAMIN LYNCH TO HEAD CREIGHTON DENTAL SCHOOL

Benjamin L. Lynch was appointed dean of the Creighton University College of Dentistry, Omaha, June 5, it has been announced by Reverend Carl M. Reinert, president of the University. Dr. Lynch succeeded James H. Pence, who resigned his position recently.

A graduate of Creighton College of Dentistry, Dr. Lynch joined its staff in 1948. He received his Master's degree in education from Creighton in 1953 and a Master's degree in oral surgery from Northwestern in June 1954. Previous to assuming the post of dean at Creighton, Dr. Lynch was assistant professor in oral surgery.

COURT RULES DENTAL SCHOOL IS SEPARATE DEPARTMENT

The Oregon State Supreme Court has ruled that the Oregon dental school is a separate department in the state system of higher education rather than a subordinate part of the University. The decision means that henceforth the dental school will deal directly with the state board of higher education on matters of administration and budget. The school has been directed to use the name "The Dental School of the University of Oregon" instead of "The University of Oregon Dental School."

GRADUATES CONTRIBUTE TO DENTAL FOUNDATION

The 34 members of the North Carolina school of dentistry's first graduating class have pledged a class contribution of $3,400 to the Dental Foundation of North Carolina, Inc. Each member of the class will contribute a minimum of ten dollars a year for the next ten years to bring the total to $3,400. In addition, the Dental Auxiliary of the North Carolina Dental Society has contributed $2,200 to the Foundation for student loans and research.

The purpose of the Dental Foundation, which was incorporated in North Carolina in 1950, is to make available to the University of North Carolina School of

Dentistry funds for research, fellowships, lectureships, visual education, student loans and other activities not supported by funds from state appropriations. More than $100,000 has been contributed thus far to the Foundation.

N.Y.U. RECEIVES $500,000 FOR DENTAL RESEARCH

The Murry and Leonie Guggenheim Foundation has made a grant of $500,000 to establish an Institute of Dental Research at New York University College of Dentistry.

The grant will be a significant step in helping to close the "research gap," said Raymond J. Nagle, dean of the College. "Research in the sciences of dentistry," he said, "has not kept pace with the advances in the clinical sciences. Less than 2 per cent of current research expenditure in the health sciences is assigned to dentistry."

Among the research problems to be investigated at the Institute are nutritional factors in dental disease, the relation of oral pathology to rheumatic heart disease and bacterial endocarditis, problems of anesthesia, and the endocrine system as it relates to systemic and dental disease.

DENTAL SCHOOLS OFFER POSTGRADUATE COURSES

Northwestern • A course in clinical occlusion will be given at Northwestern University Dental School under the direction of the departments of orthodontics, prosthetics and oral pathology October 4-6. The basic theory of occlusion will be presented in terms of the development, growth and function of the temporomandibular joints and their related muscle physiology.

Ohio • A series of postgraduate courses are being offered during the months of September and October by the College of Dentistry, Ohio State University, in Columbus. These courses are given for five consecutive days each, Monday through Friday. Enrollment is limited to approximately ten in each class.

An innovation this year is the three day course in new advances in restorative dentistry. Other courses offered include anatomy of the head and neck, clinical oral pathology and diagnosis, oral surgery, partial denture prosthesis, periodontics, basic cephalometrics, general anesthesia and complete denture prosthodontics.

Temple • Temple University announces a course in occlusion which will present the fundamentals of occlusion in relation to the physiology and pathology of the periodontal tissues. The principles of occlusion will be correlated with clinical criteria and therapeutic aims. The course will be given January 26-28, 1955. Application may be made to Louis Herman, director of postgraduate studies, Temple University School of Dentistry, in Philadelphia.

Tufts • A course on complete denture implants is scheduled by Tufts College Dental School for September 15, 22, October 13, 20 and 27, under the direction of Norman I. Goldberg and Aaron Gershkoff. The lectures and demonstrations will be supplemented by slides and a motion picture.

Irving R. Hardy will teach a full-time postgraduate course in complete and partial denture prosthesis at Tufts College Dental School in Boston during the academic year starting September 1954. The course will run until June 1955. In selected cases students may continue for a total of 18 months to qualify for a degree of Master of Science or Master of Science in Dentistry. Other postgraduate courses being offered by Tufts are:

Special participation courses in periodontology, one running for eight Mondays November 22, 1954 through February 7, 1955; a second running Monday through Friday October

18-22; a third running Monday through Friday, April 11-15, 1955.

A course in Kirkland gingivectomy technic, May 16-20, 1955; a course in occlusal equilibration February 14-16, 1955.

For the oral surgeon a course in oral pathology, Thursday afternoons for eight weeks, October 7 through December 2, 1954; diagnostic clinics in oral pathology, Monday evenings for eight weeks, November 15, 1954 through January 17, 1955; histopathology of oral disease, January 24-29, 1955.

Minor oral surgery, Wednesdays, October 13 to December 1; general anesthesia, Wednesdays, December 15 to February 16; complete denture prosthesis, Tuesdays, October 5 to November 16; occlusal rehabilitation, Monday through Friday, September 20-24, and a special participation course in occlusal rehabilitation, every other week on Friday and Saturday, beginning October 15.

Col. John S. Oertel, DC, USA, (right) received a certificate of commendation from Maj. Gen. Earl Standlee, USAFFE, in Tokyo June 1. Colonel Oertel was commended for outstanding service as chief of the dental service at the Tokyo Army Hospital.

National Defense

THOMAS P. FOX NAMED TO ADVISORY COUNCIL

Thomas P. Fox of Philadelphia has been named to the Civilian Health and Medical Advisory Council of the Department of Defense to replace James P. Hollers, as a result of the new policy of membership rotation of the advisory council, it was announced late in June.

Dr. Fox, a colonel in the United States Army Reserve, is the dental representative for Pennsylvania to the National Advisory Committee to Selective Service. Active also in state dental society affairs, he served as secretary to the Pennsylvania State Dental Society from 1934 to 1937 and as the society's vice-president in 1938. From 1937 to 1941, Dr. Fox was a member of the state board of dental examiners. Previously, he taught at the University of Pennsylvania dental school.

GENERAL COWAN RETIRES; HONORED AT DINNER

Brig. Gen. Egbert W. Cowan, DC (USA), director of dental activities at Walter Reed Army Medical Center, retired May 31 after more than 35 years in federal service. General Cowan was honored in May at a dinner held at Walter Reed Army Medical Center, at which time he was awarded a certificate of distinguished performance by Maj. Gen. Leonard D. Heaton, the Center's commanding general. The certificate stated, "You have earned the gratitude and re-

General Cowan

spect of every individual on the staff of this Command and have won a permanent place on the rolls of its distingiushed members."

From October 1952 until his assignment at Walter Reed, General Cowan was assistant chief, U. S. Army Dental Corps, Office of the Army Surgeon General in Washington, D. C. Previously, he was dental surgeon of the Fifth Army in Chicago.

Research

DEVELOPMENT OF HIGH SPEED DENTAL DRILL ANNOUNCED

The National Bureau of Standards recently announced the successful construction of a hydraulic-turbine dental handpiece with a speed of 61,000 rpm. The maximum speed of a conventional tool is 6,500 rpm. With the new high speed handpiece, very low cutting pressure is required, and dental enamel can be penetrated with a minimum of vibration and heating. The handpiece was developed by R. J. Nelsen, who was assigned to the Bureau of Standards on an A.D.A. fellowship, C. E. Pelande, and J. W. Kumpula of the Bureau of Standards staff.

RULES PUBLISHED FOR F.D.I. RESEARCH COMPETITION

The Fédération Dentaire Internationale has announced the rules of the competition for the Albert Joachim International Prize, which will be awarded at the F.D.I.'s International Dental Congress to be held at Rome in 1957. The Prize is given "for the best purely scientific research in the field of odontostomatology." The winner of the award will receive a medal and 50,000 Belgian francs (about $1,000).

A candidate for the Prize must be legally qualified to practice dentistry or must hold a university degree in one of the sciences. Only research work that is strictly original and as yet unpublished will be considered in the competition. The thesis is limited to 10,000 words, exclusive of illustrations. Six copies of the thesis should be sent to the Secretary General of the F.D.I., 35 Devonshire Place, London, no later than July 1, 1956.

MEN FROM THREE COUNTRIES VISIT RESEARCH FELLOWSHIP

Persons interested in dental research from three countries visited the Dental Research Section of the National Bureau of Standards in Washington during May and June. They were Colin Cooke of the Turner Dental School, University of Manchester in England; Alan Mack of the prosthetic department, University of London, England; Ricardo Augusto Crespi of Buenos Aires, Argentina; J. E. MacHannaford also of Buenos Aires; and Zvi Abramowsky, consultant to the surgeon general of the army in Israel.

NAME CONSULTANTS TO DENTAL RESEARCH COMMITTEE

J. Roy Blayney, director of the Zoller Memorial Clinic at the University of Chicago, and William R. Mann, associate director of the W. K. Kellogg Foundation Institute, Graduate and Postgraduate Dentistry, University of Michigan, have been named for a three year term as consultants to the Dental Research Advisory Committee of the Office of the Surgeon General of the Army.

Announcement of the appointment was made May 18. The new consultants replace Robert G. Kesel, professor of dental therapeutics at the University of Illinois, and George C. Paffenbarger of the U.S. Bureau of Standards.

CHEMISTRY OF TEETH IS CONFERENCE TOPIC

The structure, chemistry and physiology of bones and teeth is the subject of the 1954 Gordon Research Conference, sponsored by the American Association for the Advancement of Science. The conference will be held July 19-23 at Kimball Union Academy, Meriden, N. H. Felix Bronner of the department of food technology at Massachusetts Institute of Technology will act as chairman. Co-chairmen are William F. Neuman of the School of Medicine and Dentistry of the University of Rochester and Reidar F. Sognnaes of the School of Dental Medicine at Harvard University.

The purpose of the conference is to bring together experts to discuss and analyze the latest developments in the field of chemistry in order to stimulate further research. Mornings and evenings will be devoted to lectures and discussion. Afternoons will be available for informal discussion among the conferees.

Attendance at the conference is limited to 100. Further information may be obtained from W. George Parks, director, Colby Junior College, New London, N. H.

International

KOREA DENTAL SCHOOL THANKS U. S. DENTISTS

Park Myung Jin, dean of the College of Dentistry, Seoul National University, Korea, has sent a letter to the Association, expressing the gratitude of the dental school for the work of the Association in collecting dental equipment to be sent to Korea.

The equipment is being collected in connection with the "Help Korea Train" campaign. The Korean dental school was largely destroyed during the war. There are less than 1,000 dentists in Korea today.

NEW BELGIAN PERIODICAL TO BE PUBLISHED QUARTERLY

A new dental periodical, *Le Technicien Belge en Prosthese Dentaire,* is being published quarterly by the Dental Prosthetics Technicians in Belgium. Information about the journal may be obtained from Guy Lamaille, editor, 141 rue Froissart, Brussels, Belgium.

PARIS TO BE SCENE OF FRENCH DENTAL CONGRESS

André Lattès, dental consultant for the Laënnec Hospital of Paris, will preside at the Congrès Français de Stomatologie to be held early in October in Paris.

Topics to be discussed include surgical treatment of the mandible, implant dentures and the possibilities and limitations of different orthodontic systems.

INDEX SCANDINAVIAN DENTAL LITERATURE

An index to Scandinavian dental literature is being published annually in the final number of *Odontologisk Revy,* the journal of the South-Swedish Dental Society. A large number of articles are now published in English, it has been reported, and a majority of articles written in the Scandinavian languages are summarized in English. Copies of *Odontologisk Revy* may be found in the more important dental libraries or may be obtained by subscription.

AUSTRIAN CONVENTION TOPICS TOLD

Caries prevention, periodontal disease, partial prostheses and oral surgery are among the topics which will be discussed at the Austrian dental convention in Innsbruck, Austria, September 23-25. The convention is being held on the occasion of the 40th anniversary of the Tirolese Dental Society.

REPUBLIC OF PANAMA HONORS AMERICAN DENTIST

Cmdr. Kenneth L. Longeway, (DC) USN, was presented the Medal of the Order of Vasco Núñez de Balboa of the Republic of Panama in a ceremony May 4 at the Panamanian Embassy, Washington, D. C. He was sponsored for this honor by the Republic of Panama Dental Association for his work in advancing dentistry during his two year tour of duty in Panama.

The Order of Vasco Núñez de Balboa is awarded to persons who have made distinguished contributions to Panama in science, art and literature. It is seldom awarded to persons who are not citizens of Panama.

Cmdr. Longeway is head of the operative dentistry department at the U.S. Naval Dental School, National Naval Medical Center, Bethesda, Md.

Cmdr. Kenneth Longeway, (DC) USN, receives an award from Panamanian Ambassador Don Robert Heurtematte in Washington, D. C., May 4 for his assistance to Panamanian dentistry.

PERUVIAN DENTISTS PLAN NOVEMBER MEETING

The Academy of Stomatology of Peru is organizing the Fourth National Congress of Dentistry to be held November 14-20 in Lima under the auspices of the government of Peru. Subjects to be discussed include social dentistry, dental science and technics and university teaching of dentistry.

JAMES QUINTERO, FRENCH ORTHODONTIST, DIES

The death of James T. Quintero, distinguished French orthodontist, has been announced by the journal *Annales Odonto-Stomatologiques* of which he was the founder and editor.

Dr. Quintero was the best-known dentist of southern France, and he was a frequent contributor of dental literature in English. He was the founder of the French Society of Dento-Facial Orthopedia, editor of four dental journals and founder of three during his career. He was a member of the faculty of l'Ecole Dentaire de Lyon in charge of dentofacial orthopedia. He published two volumes on his specialty.

FOUR DENTAL CONGRESSES SCHEDULED IN BRAZIL

Four dental congresses have been scheduled for October 25-30 in Sao Paulo, Brazil. They are the First International Dental Congress, the Fifth Brazilian Dental Congress, the Second Pan-American Congress of Dental Schools and a meet-

ing of the Federação Odontológica Latino-Americana.

These meetings are organized by the União Odontológica Brasileira, Brazil's National Dental Organization. Harold Hillenbrand, A.D.A. Secretary, has been invited to speak.

General

MORE THAN 2,400 DENTISTS JOIN GROUP HEALTH PLAN

As of June 11, more than 2,400 dentists in the New York metropolitan area had agreed to participate in Group Health Dental Insurance, Inc., according to Bissell B. Palmer, GHDI president. GHDI is the voluntary prepayment dental insurance plan sponsored by the First District Dental Society of the State of New York.

In addition to the interest shown by dentists, interest in the plan has been expressed by groups representing more than 109,000 prospective patients. Actual enrollment will not occur, however, Dr. Palmer stated, until the directory of participating dentists has been completed.

Once initial dental defects are corrected (the patient pays the first $150 of this cost), Group Health Dental Insurance meets all the costs of dental care for families with incomes below $5,000 and pays indemnities toward costs of care for families with incomes over $5,000. For families with incomes below $5,000, participating dentists agree to accept the GHDI schedule of fees as full payment. When the subscriber earns over $5,000, the dentist charges his usual fees.

Under another feature of the plan, subscribers may elect a 50 per cent indemnification arrangement at a cost of approximately 61 per cent of the full premium.

Services are to be rendered in the offices of the participating dentists. Subscribers have the free choice of any participating dentist, and a dentist may refuse to accept any patient.

The governing body of GHDI is a board of directors of 24 members. Membership on the board is divided equally between dentists and laymen. The dental members are leading practitioners of the dental profession in New York, and the lay members include representatives of management, labor and various interested professions.

ORAL SURGEONS' MEETING TO HONOR DOUGLAS PARKER

Douglas B. Parker will be honored at the annual meeting of the Metropolitan-New York Society of Oral Surgeons to be held at St. Albans Naval Hospital September 15. Dr. Parker has been appointed professor of maxillofacial and oral surgery at Loyola University in New Orleans.

PERIODONTOLOGY ACADEMY SETS THREE DAY MEETING

The American Academy of Periodontology will hold its annual meeting at the Empress Hotel in Miami Beach, Fla., November 4-6. Members of the A.D.A. and foreign dental associations are welcome to attend, the Academy has announced.

JAMES R. LISA AWARD PRESENTED TO DENTIST

A feature of the annual formal dinner meeting of the medical board of New York City Hospital held May 17 at the Hotel St. Regis was the presentation to Clarence M. Calman of the first James R. Lisa award. This award is to be given annually to the New York City Hospital resident doctor who presents the best case report essay of the year.

Dr. Calman's report, "Hemangio-endothelioma of the Palate," dealt with a case treated on the oral surgery service of the New York City Hospital under the direction of Pincus Sherman. The award of $100 was presented to Dr. Calman by Dr. Lisa, sponsor of the award and chief pathologist of the City of New York.

WILLARD S. BELL, PROMINENT NEW YORK DENTIST, DIES

Willard S. Bell, prominent New York dentist, passed away June 11 after a brief illness. Dr. Bell was director of dentistry

Willard S. Bell

and a member of the executive committee of the medical board at Triboro Hospital. He also was director of dentistry at Neponsit Beach Hospital.

Active in the affairs of organized dentistry, Dr. Bell served for many years as a delegate to the House of Delegates of the American Dental Association. He served the Second District Dental Society of New York as its president in 1948 and as trustee from 1938 to 1945 and again from 1949 to 1952.

Dr. Bell was a fellow of the American College of Dentists and of the International College of Dentists. He also was a member of the New York Academy of Dentists, the Long Island Odontological Society and the Fédération Dentaire Internationale.

ALPHA OMEGA FRATERNITY IN SCHOOL FUND DRIVE

The Alpha Omega Dental Fraternity has assumed responsibility for raising $300,000 to help the cause of dental education in the Middle East. In conjunction with the Hebrew University of Jerusalem, a temporary dental school has been opened this year with 15 students entered in the freshman predental class. The school's opening was accomplished by Alpha Omega's sending $30,000 for renovation of one of the school's medical buildings.

The current fund drive has as its aim the establishing of permanent premises for the school. Funds also are being raised for scholarships.

The average age of dentists in Israel is reported to be 54 years. There is an ever-increasing number of persons who have never seen a dentist.

JOHN SOMERVILLE CITED FOR WORK IN HUMAN RELATIONS

John Alexander Somerville of Los Angeles was honored at a testimonial banquet held on the campus of the University of Southern California in late April. The banquet was held in celebration of his seventieth birthday and in recognition of his years of service in the field of human relations. A month earlier, Dr. Somerville had received the Most Excellent Order of the British Empire for his efforts to further Anglo-American relations.

A practicing dentist for almost half a century, Dr. Somerville is also an author and civic leader. His book *Man of Color* received many favorable reviews.

POSTGRADUATE EDUCATION IN RURAL AREAS DISCUSSED

The problem of providing postgraduate instruction to interested dentists who live in rural areas was discussed at a meeting

Elected officers of the American Academy of Dental Medicine at its meeting held May 15 in Philadelphia were (l. to r.): Irving Yudkoff, editor; William M. Greenhut, secretary; George F. Clarke, president; S. Leonard Rosenthal, president-elect; William H. Copperthwaite, vice-president, and George G. Stewart, treasurer.

of the Academy of General Dentistry held in the A.D.A. Central Office May 26. It was pointed out that many dentists who live in rural communities are denied the opportunity of receiving formal postgraduate instruction because of the distance to schools. A special committee was set up to deal with the problem.

The Academy also formulated plans to provide members and applicants with a special training course in civil defense. It was announced that participation in the University of Illinois College of Dentistry telephone and sound projection program may be used for credit toward membership in the Academy.

Lon W. Morrey, A.D.A. editor, was awarded membership in honor of his contribution to dental literature. Information on the Academy of General Dentistry may be obtained from A. L. Knab, secretary, 8500 S. Stony Island Ave., Chicago.

Also . . . J. B. Carr, A.D.A. Trustee from 1947 to 1952 has been presented the Indiana Public Health Association award for "distinguished and effective service in the field of public health." Dr. Carr is the first dentist to be honored by the Association. . . . The Canadian Dental Association and the New Brunswick Dental Society will hold a joint meeting September 5-8 at St. Andrews-by-the-Sea, New Brunswick. Applications may be sent to S. K. Wetmore, 147 Germain Street, St. John, N. B. . . . The first issue of an attractive and informative news letter has been published by the New Mexico State Dental Society in cooperation with the dental health division of the New Mexico Department of Public Health. . . . Edgar D. Coolidge, who has spent more than a quarter of a century at Loyola (Chicago), received in April the dental school's first annual award to a distinguished dental alumnus. Dr. Coolidge has written more than 500 professional papers. He is author of a textbook on endodontia. . . . The Southern California State Dental Association plans to establish a dental health education center for children similar to the Museum of Health in Cleveland. . . . Two additional groups have announced meetings in Miami preceding the annual session, the American Academy of Implant Dentures November 6 and 7, the American Dental Society of Anesthesiology November 6 and 7 at the Belmar Hotel.

International Correspondence

NEWS FROM GREAT BRITAIN

W. Stewart Ross reports that the annual meeting of the British Dental Association was held in Blackpool May 10-14. For the first time at an annual meeting of the Association the question of fluoridation was thoroughly discussed by a panel of experts. The panel included three members of the United Kingdom Mission to the United States which studied United States fluoridation projects under the leadership of Professor Stones, dean of the University of Liverpool School of Dental Surgery.

Mr. Hindle was installed as president of the British Dental Association. In his inaugural address, Mr. Hindle stressed the growing emphasis which the dental profession in Great Britain is giving to the prevention of dental disease. A comprehensive report issued by a subcommittee of the British Dental Association Council on Child Dental Health has just been published in the Association journal, and considerable publicity has been given to it in the daily press. The report recommends that the government immediately begin investigation into the fluoridation of community drinking water, and that steps be taken to further research on dental caries.

Delegates and alternates were chosen to represent the Association at the 42nd Annual Meeting of the Fédération Dentaire Internationale, which is being held in Scheveningen, Holland, in June. Delegates are: W. R. Cleverley; C. B. de Vere Green, president of the American Dental Society of London; W. Peebles, vice-chairman of the representative board of the British Dental Association, and W. Stewart Ross, member of the Council of the British Dental Association and chairman of the Council of the International Dental Federation. Alternates are: Prof. J. Aitchison, director of studies, University of Glasgow Dental Hospital and School; J. W. Gilbert, honorary treasurer of the British Dental Association; Seymour Robinson, secretary of the metropolitan branch of the British Dental Association, and R. O. Walker, member of the Council of the British Dental Association.

Among the numerous demonstrations shown at the Blackpool meeting was an ultrasonic drill operating at 25,000 vibrations a second. Experiments with the drill undertaken by Royal Air Force dentists are still in their early stages, but it was claimed that cavities could be cut in the teeth in a minute or so, without pain or vibration.

Cyril de Vere Green writes that one of the most publicized events of the British Dental Association meeting was the demonstration of hypnosis. During the meeting the British Broadcasting Corporation reported a case in which an impacted lower third molar was removed under hypnosis. After this report, the successful removal under hypnosis of an erupted upper third molar was televised. Quite naturally, the effect of this publicity has been noticed in practically every dental office in Great Britain, and every day dentists are being asked about hypnosis.

RECRUITMENT TO THE PROFESSION

Sir Wilfred Fish writes of the Dental Board of the United Kingdom which met May 11-13. It was reported that for the first time since the war years there was a decline in the number of practicing dentists. Furthermore, reports from the dental schools indicate that, although a slight increase in the number of graduates may be expected next year, there will be a fall in the number for the succeeding years. An *ad hoc* committee was set up by the Board to inquire into means by which recruitment could be stimulated.

The Dental Board collects an annual registration fee from each practicing dentist and is charged with the responsibility of spending its surplus funds in dental education or research or on public matters related to dentistry. Between the wars a sum of £227,376 was spent to provide scholarships for dental students, and approximately one sixth of the men qualifying during the time that the scholarships were in effect were receiving financial aid. Indeed, the annual number of dentists added to the register during these years was approximately the same as the number of men assisted by scholarships. This provision was discontinued during the war since young men did not enter the schools in the normal way.

After the war an interdepartmental committee recommended that the provision of scholarships should be considered a responsibility of the state rather than of the profession. It was believed that in the matter of scholarships, dentistry should have special priority.

Government policy, however, does not recognize any such priority, so that if prospective dental students are to have any preference over candidates for other faculties in the university, it will be necessary to find the money from other than government sources. Hence the concern shown by the Dental Board, and the appointment of a committee to inquire into the whole matter of recruitment to the profession.

THE NATIONAL HEALTH SERVICE

Jack Gilbert writes that dental treatment under the National Health Service in Great Britain is provided (a) by the general practitioner in his office, (b) by the public dental officer in school clinics and (c) by hospital officers in hospitals throughout the country. Full-time officers are paid on a monthly salary and part-time officers on a sessional basis by the following method. A week of five and a half days is considered 11 half-days, and the practitioner is paid for an assessed number of "notional" half-days. The "notional" figure represents not only his attendance each week at regular sessions but also such additions as emergency calls and time spent in traveling to outlying hospitals. The rate of pay per session for part-time officers is at a slightly higher rate than for full-time salaried staff, but no part-time officer is permitted to receive payment for more than seven sessions per week.

The remuneration of full-time dental hospital officers was increased April 1, and those officers now receive per annum payment at the following rates: Consultants receive approximately $5,880 to $8,680. Senior hospital dental officers receive $4,200 to $5,460. Senior registrars receive $3,080 for the first year, $3,920 for the fourth and subsequent years. Registrars receive $2,380 for the first year and $2,072 for the second year. House officers receive $1,190 for the first post held, $1,330 for the second post, $1,470 for the fourth and subsequent posts.

ITEMS OF INTEREST

Last year the dental faculty of the Royal College of Surgeons struck a gold medal, "The Colyer Medal," in honor of the late Sir Frank Colyer, whose death was reported last month. As Sir Frank was a pioneer in maxillofacial surgery, it is appropriate that the first award of the medal should go to Sir William Kelsey Fry for his contribution to maxillofacial surgery.

In July we shall be welcoming both old and new friends to the annual meeting of the American Dental Society of Europe to be held this year in Paris. One often hears from our colleagues in the United States who have attended these meetings that they regard them as the finest annual scientific dental meetings held. A perusal of this year's program confirms that opinion. Among those coming over are Russell Bassett of Beverly Hills, Calif.; Raoul Boitel of Zurich, Switzerland; Bertram Downs of Colorado Springs, Colo.; Henry Harris of Los Angeles; Carl Miller of Cleveland; Edward Ortion of New York; Kyrle Preis of Baltimore, and Paul Ramsay of Beverly Hills, Calif.

The dental postgraduate bureau of the Dental Board of the United Kingdom, 44 Hallam St., London W. 1., has lately issued three very interesting booklets dealing with postgraduate study in the United Kingdom entitled *Facilities for Dental Postgraduate Study in the United Kingdom and Ireland, Scholarships and Studentships for Advanced Studies and Research in Dentistry* and *Higher Dental Qualifications.*

Gerald H. Leatherman,
D.M.D., F.D.S.R.C.S.

Association position concerning appropriation for dental activities of U.S. Public Health Service

Floyd W. Pillars of Des Moines, Iowa, a member of the Council on Legislation, testified before the Senate and House Appropriations Committee on May 24 and 25, presenting the views of the Association on the proposed appropriations for the dental activities of the U.S. Public Health Service which includes the National Institute of Dental Research. The statement which follows stresses the need for additional research funds, particularly for research grants-in-aid and fellowship grants to support research activities at dental schools throughout the country. Dr. Pillars was accompanied by Mr. Howard N. Greenblatt, assistant secretary of the Council.

My name is Floyd W. Pillars. I am a dentist actively engaged in the practice of oral surgery in Des Moines, Iowa, and am a past president of the Iowa State Dental Society. I appear before you today as a member of the Council on Legislation of the American Dental Association to present its views with respect to the proposed appropriation for the dental health activities of the United States Public Health Service. With me is Mr. Howard N. Greenblatt of Chicago, assistant secretary of the Council, who will assist me in answering any inquiries you may make.

As you know, the American Dental Association is the official spokesman for more than 80 per cent of the dentists of this country. Consequently, it has a fundamental interest in all matters affecting the dental health of the public. This bill which contains appropriations for the dental health activities of the United States Public Health Service is, therefore, of obvious interest to us.

Representatives of our Association have come before you repeatedly in the past to describe for this committee the magnitude of the dental health problem in this country. It would be of little value for me to repeat all that we have said before with regard to the oral health problem. I will, however, outline in a few words, the extent of the dental problem for the purpose of refreshing your memory and to assist you in evaluating our position and recommendations on the budget proposals now before you.

Despite the great advances made in dentistry by research in the past, and despite what we and you are presently doing in support of dental research, the dental health of the public remains in a distressing condition. Dental caries, the most prevalent dental disease, affects over 95 per cent of our fellow countrymen. Periodontal disorders, of which pyorrhea is one, afflict approximately 85 per cent of our adult population. Over one half of all persons above 50 years of age wear, or should wear, full or partial dentures to replace teeth lost through the ravages of decay, periodontal disorders and other dental diseases. Malformation of the jaws and teeth is, unfortunately, a common, rather than an uncommon, condition in this country.

Most distressing of all is that children are not free from the impact of dental disease. For example, 50 per cent of all children at the age of two years will have one or more decayed teeth. At the age of six years, the average child will have at least three cavities. At 16 the typical child will have at least seven teeth that are either decayed, missing or filled with 14 tooth surfaces involved. In fact, by the time the average adult reaches 40 years of age he will have lost half of his teeth. It is pertinent to note too, that 15 per cent of all cancer in males occurs in the oral cavity. We need only recall the mouth conditions of those entering the service in the wars just past to make these percentages vividly describe an urgent health problem.

Dental health problems have an important economic impact. Last year the people of this country spent over one and a half billion dollars for dental care out of their own pockets exclusive of sums spent by the government for direct services, workmen's compensation and private charity. In addition, the federal government spent over $100,000,000 to provide dental treatment to the armed services, veterans, and others under its jurisdiction. This cost, which represents over one sixth of this country's total health bill, indicates graphically the scope of the dental health problem and the need for adequate research to help reduce the prevalence of dental disease.

In considering these facts we can only con-

clude that this country must adopt, without further delay, an intensive and adequately financed program of dental research for the purpose of developing additional preventives and controls for oral disease. The present limited activities supported by the Congress are not sufficient. We must attack this problem with plan and foresight as we are attacking other health problems today.

The dental profesion of this country is presently doing all that it can financially to support dental research activities. The American Dental Association contributes of its own limited resources approximately $220,000 dollars per year to dental research. Our state societies also contribute generously to support research and allied activity. The dental profession is presently assuming, and will continue to asume, its responsibilities in advancing the dental health of the public. However, our Association believes that it is time that the Congress fully appreciates the seriousness of the dental health problem and assists in its solution in a more positive manner than it is presently doing.

Unfortunately, the serious problem of the oral health of this country has been minimized by the Congress in its consideration of programs designed to advance the health of the public. Although the Congress appropriates generously for other worthy fields of medical research, it has given only token support to dental research.

Our Association noted with interest and enthusiastically supports the thoughts contained in the President's message on health which he made to the Congress on January 18, 1954. He said:

"In addition, the Public Health Service should be strengthened in its research activities. Through its National Institutes of Health, it maintains a steady attack against cancer, mental illness, heart diseases, dental problems, arthritis and metabolic diseases, blindness, and problems in microbiology and neurology. . . . In such direct research programs and in Public Health Service research grants to state and local governments and to private research institutions lies the hope of solving many of today's perplexing health problems. . . ."

As the President noted, the United States Public Health Service, through the National Institute of Dental Research, is presently engaged in research activities to solve some of the dental health problems that I have described. Within the limitations of its present funds, it is doing superb work. However, additional funds to strengthen its activities are urgently required to permit the Institute to make a more significant and timely contribution to the advancement of the dental health of the public.

The budget for fiscal 1955, now before you, proposes to appropriate to the dental health activities of the Public Health Service $1,730,000, a decrease of $10,000 from the amount authorized for the present fiscal year. It is to question the adequacy of this appropriation that we appear before you today. Let me point out to you a few areas of particular need.

1. The budget proposes to allocate to the National Institute of Dental Research the sum of $221,000 for research grants-in-aid to support dental research activities in the universities and other private research facilities. The Institute, by use of these research grants, is able to encourage private research in the universities.

This sum, the same amount that was made available last year, will support approximately 25 such research projects. As these investigations are, by nature, two to four year undertakings, it is possible for the Institute to approve only a few additional projects each year. The balance of the appropriation in this category must be expended to continue to conclusion research projects approved in past years. Because of the small amount of money now made available for this activity, and the limited number of projects these funds will support, the Institute is forced to approve relatively short term investigations. Annually, it must pass over worthy research projects for which there is an urgent need because it lacks the money with which to make present commitments.

I cannot impress on you too strongly that $221,000 is grossly inadequate in comparison with the need for dental research. It is vitally important to the public that this fund be significantly increased so as to permit the support of additional research immediately, and that Congressional assurance be given that additional funds will be appropriated in the future so as to assure the reasonable expansion of this program.

Our Association recommends that the proposed appropriation to support dental research grants-in-aid within the National Institute of Dental Research be raised to $500,000. Compared to what is appropriated in this category in other areas of health, the sum we urge upon you is little indeed. Considering the present state of dental health in this country and the vital need for research in this field, it is a pittance. For example, the proposed budget provides $6,400,000 for mental health research grants-in-aid, $6,100,000 for cancer grants, $3,152,000 for arthritis and metabolic grants, and $1,950,000 for microbiology. Certainly, dental research receives a disproportunate amount by whatever standard it may be measured. We ask you to correct this situation by increasing this sum from

Summary of grants and awards—Public Health Service research grants and fellowship awards approved for payment from fiscal year 1953 funds

Institute	Research grants		Research fellowships	
	Number of grants	Amount approved for payment	Number of awards	Amount approved for payment
Total	2,084	$20,936,410	543	$1,943,397
Division of Research Grants[1]	528	4,309,315	61	196,328
National Institute of Arthritis and Metabolic Diseases	143	1,434,945	43	144,159
National Institute of Neurological Diseases and Blindness	121	1,038,835	42	143,240
National Cancer Institute	481	5,066,152	163	595,747
National Institute of Dental Research	30	229,607	11	48,173
National Microbiological Institute	233	2,085,345	45	143,614
National Heart Institute	438	5,279,086	115	435,400
National Institute of Mental Health	110	1,493,125	63	236,736

[1]Grants in support of research that does not fall specifically within the scope of interest of any one of the Institutes are administered by the Division of Research Grants. Recommendations are made directly to the National Advisory Health Council.

$221,000 to $500,000 and by so doing provide for approximately 25 to 30 additional grants.

2. The next item I would bring to your attention is the proposed appropriation of $50,000 for support of research fellowships to develop research personnel. It is axiomatic that to do acceptable scientific research, personnel must be trained and available. It is the purpose of this appropriation to aid in the development of such personnel and make them available for dental research. It is essential that qualified persons be encouraged and developed in dental research activity. Without such a training program, no science can be expected to progress. This program is vital to our accomplishments in the future and must be strengthened.

Nor can we overlook the benefit that this program brings to the dental schools of this country. As you know there is a serious shortage of competent teaching personnel in dentistry. This shortage is appreciably lessened by the fact that many of the recipients of dental fellowships take positions on the teaching staff of dental schools where, in addition to their research activity, they are able to make a most beneficial use of their advanced study.

The proposed appropriation for fiscal year 1955 of only $50,000 will support approximately ten fellowships. Many of these fellowships are established on a two to three year basis so as to permit the individual to earn a M.S. or Ph.D. degree. Thus only a few fellowship awards can be granted each year. Because of lack of funds, the applications of many young and promising individuals must be turned down while others are discouraged from filling applications. We would point out that the budget proposes to appropriate $625,000 for such fellowships in cancer, $187,000 for mental illness, $450,000 for the National Health Institute and $117,000 for fellowship grants in microbiology. Again, as in the appropriations for research grants-in-aid, the amount recommended for research fellowships in dentistry is disproportionate to the known need for the development of dental research personnel and to the amounts appropriated for fellowships in other health fields. We ask that this committee raise this appropriation to $150,000. The appropriation we recommend would support a total of approximately 30 fellowships in dentistry, a number which the Institute will have no difficulty awarding to qualified persons.

I think the accompanying table, which is a summary of the research grants-in-aid and fellowship awards made by the National Institutes of Health of the Public Health Service in fiscal year 1953, illuminates one of the points I have been making, and I recommend it to your attention in considering the budget now before you.

A casual inspection of this table clearly shows the disproportionate support given dental research. For example, in fiscal 1953 the National Institute of Dental Research obtained only 1.1 per cent of the total funds available for research grants-in-aid with which to support its activities. These funds could support only 30 or 1.4 per cent of the total number of grants-in-aid awarded by the National Institutes of Health. The National Institute of Dental Research obtained only 2.5 per cent of the funds made available for research fel-

lowships and could maintain with these funds only 11 fellows or 2 per cent of the total number of fellowships granted. We must admit that if these figures indicate anything they indicate that dental health and dental research are being ignored. As I have said before, the American Dental Association itself, through the dues of its members, makes available to its own dental research activities approximately $220,000 a year—a sum that all but equals that granted by the Congress in past years for grants-in-aid and fellowship awards in dental research.

3. The final specific item I would bring to your attention is the proposed appropriation of $100,000 for the coordination and development of the dental resources of this country. This appropriation supports activities in the promotion of dental health that are all too little appreciated. This function of the U. S. Public Health Service concerns itself with studies and investigations designed to increase the efficiency, capacity and utilization of presently available dental manpower and dental facilities. In cooperation with the dental schools, studies are undertaken to determine how enrollment capacities can be enlarged in order that more dentists can be trained. Studies are made of dental manpower and its distribution so that more effective utilization can be made of our present personnel. Dental technics and procedures are studied and developed to bring to the private practitioner knowledge that will enable him to render a better health service to an ever increasing population.

In 1953, $121,722 was actually expended in this activity. Last year $112,000 was appropriated so that the proposed appropriation of $100,000 for the coming fiscal year represents a cut of $12,000. Our Association feels that this activity has been most beneficial. It is our observation that this division is presently suffering in its work from lack of funds. We recommend, therefore, that this committee appropriate to this activity $130,000 for the coming fiscal year.

Our Association notes and commends the committee for increasing the appropriation for the direct research activities of the National Institute of Dental Research and its additional operations at the Clinical Center from $573,875 to $620,000. As you know, this money is used to support research in both fundamental and clinical fields, which includes research on the causes and control of dental caries, periodontal diseases and innumerable other facets of dental and oral disease. We sincerely hope that this committee in the years to come will see fit to increase this sum as the need for this research activity cannot be overestimated. A great wealth of pertinent and basic information is being assembled by the National Institute of Dental Research, and its activities must be ever encouraged and expanded.

Our Association again wishes to bring to the attention of this committee the urgent need for a building to house the activities of the National Institute of Dental Research. As you know, the 80th Congress authorized the construction of such a building, and appropriated $100,000 to prepare the architectural plans. The money to actually construct this building has never been appropriated.

The many research activities of the Institute are now crowded into space inappropriate for the conduct of their investigations. The present facilities are not only presently inadequate but are such that they will not permit the necessary expansion and coordination of the research activities of the Institute.

There is an urgent need for this building today. Our Association doubts whether the cost of construction will decrease sufficiently in the years ahead as to warrant putting off its construction any longer. We ask that this committee recommend the amounts necessary for its construction in accordance with the plans presently available.

We wish to thank you for the time granted us today to discuss the dental health problem and the need for an adequate research program. It is a serious problem. We feel that a greater contribution to the solution of that problem must now be made by the federal government. The dental profession, both nationally and locally, has extended itself in every possible manner. However, we must admit our limitations. A program of intensive research in the field of dental and oral disease is urgently needed, and we commend it to you.

Book Reviews

ANTIBIOTICS

By F. A. Robinson, M.Sc.Tech., LL.B., F.R.I.C. 132 pages. Index. Price $3. New York, Pitman Publishing Corp., 1953.

Despite its brevity, this is a remarkably comprehensive survey of the antibiotics. It can be dated by the fact that erythromycin is mentioned and carbomycin is not. Tetracycline, a somewhat newer discovery, is, of course, not discussed.

Manufacturing procedures, chemistry and bacteriology, pharmacology and clinical applications are covered. The practicing dentist who can spend some time reading, but who cannot hope to cover the original literature on antibiotics, will find much basic material interestingly presented in this book. It is well organized and skillfully edited.

Dental applications are hardly mentioned. This is to be expected, since the author makes no pretense of providing information for any special group of practitioners.

Donald A. Wallace

INTERNAL MEDICINE IN DENTAL PRACTICE

By Bernard I. Comroe, M.D.; Leon H. Collins, M.D., and Martin P. Crane, M.D. Fourth edition. 563 pages with 86 illustrations and 8 colored plates. Index. Price $7.50. Philadelphia, Lea & Febiger, 1954.

This edition of a popular text on a phase of modern internal medicine which may be of importance to both the practicing dentist and dental student retains all the excellent qualities of the earlier ones. It reports recent changes in practice, changes that are almost revolutionary in their scope and significance, so that the dentist's "speaking knowledge" of this subject may be kept up-to-date.

The practice of blocking off summaries of the text and items of greatest significance to the dental reader has been continued so that answers to the questions that constantly come up in dental practice actually stare out of the text at the reader. Among such questions are: (1) How much of a medical history should the dentist record? (2) How great a risk is there in operating on a cardiac patient? (3) What are the general and oral symptoms of diabetes, and how does diabetes affect the oral cavity? (4) What is the current view on focal infection in relationship to rheumatoid arthritis? (5) What is the general attitude toward pulpless teeth?

The illustrations are excellent and pertinent. The two junior authors are engaged in the active practice of medicine and are well qualified to finish this book which was started by the late Bernard I. Comroe. The book is compact and well arranged; the paper and the printing are of high quality.

Edward H. Hatton

MAYO CLINIC DIET MANUAL

By Committee on Dietetics of the Mayo Clinic. Second edition. 247 pages. Index. Price $5.50. Philadelphia, W. B. Saunders Co., 1954.

This second edition presents as accurately and completely as possible current dietary practices at Mayo Clinic and associated hospitals. Diet plans and menus have been outlined for the great variety of situations which occur at such institutions.

The manual is of great value to anyone who is directing special diets. Emphasis is placed on the proper serving of food, because it is essential that the food served be eaten if the diet is to be of value to the patient.

The inadequacies of the usual special diets have received careful attention. Special diets used frequently in the past lacked the proper quantities of some dietary essentials. Diets that were beneficial in specific disease conditions when used too long favored the development of secondary disease symptoms.

The diets in this manual have been carefully planned in relation to recommended allowances specified by the National Research Council in 1953. By considered adjustment, it was possible to meet the requirements of the special conditions with diets which more nearly approached dietary allowances. Whenever the diets fail to meet allowances, that fact is clearly stated; and suggestions are made as to the length of time the diet may be used without serious risk. The vitamin, mineral or other supplementation which might be used is also suggested.

Programs for control of obesity also are outlined. The manual has limited interest for dentists. Diet plans relating to dental aspects, such as caries control, for example, are not included.

Dorothea F. Radusch

LETTERS TO A DOCTOR'S SECRETARY

By Anna Davis Hunt. 75 pages. Price not listed. New Jersey, Medical Economics, Inc., 1952.

This small book consists of sixteen letters, written by the former secretary of a prominent surgeon to her successor. Its purpose is to present to the new secretary a realization of the responsibility she assumed with respect to the public, her employer and the medical profession when she accepted her new position.

The letters outline problems that arise in the normal daily routine of a medical office, and contain a wealth of instruction on how to meet each situation gracefully.

This book is good on every count. The appeal lies partly in the way it is put together, the clear and positive order and orderliness of ideas. It supplies instruction in efficient office management, written in informal and conversational fashion, without the loss of clearness or dignity.

The position of medical secretary requires specialized knowledge; the writer of these letters has succeeded in offering sensible and specific suggestions from knowledge gained by sixteen years experience in the field.

There is a definite similarity between the duties of a physician's assistant or secretary and those of the dentist's assistant. Therefore, this reviewer feels that the book would prove a valued addition to the modern dental library.

Violet L. Crowley

RESIN FILLINGS WITH SELF-CURING POLYMERS

By Carl Heinz Fischer. 106 pages with 120 illustrations. Index. Price 5.60 German marks. Leipzig, Germany, Johann Ambrosius Barth, 1952.

The author was among the first to recognize the possibilities of self-curing resins as filling materials in restorative dentistry. Since 1949 Dr. Fischer and his co-workers have made extensive studies of the problems presented by these resins and their application to dental practice. This treatise, which appeared in 1952, embodies the practical experience the author has gained in the field.

Although knowledge of these materials has increased since publication of this book, no fundamentally new developments have taken place in the last two years. Thus, the procedures described are still most useful for the practicing dentist.

The author first gives data on the chemical and physical properties: shrinkage, hardness, resilience, adhesion, water sorption, heat rise, color stability, incomplete hardening, damage to mouth tissue and effect on pulp.

A large portion of the book deals with detailed directions for the placing of plastic fillings, which are based on the author's clinical investigations.

Of particular interest appears to be the use of a steel matrix in building up edges for Class IV cavities and the stress on employing a plastic dough of thick consistency. The chapter on special filling technic contains detailed instructions for use of the material for different types of cavities. A comprehensive subject index, bibliography and excellent photography enhance the value of this book.

Gerhard M. Brauer

MANUALE DI CLINICA ODONTOIATRICA (MANUAL OF DENTAL CLINIC)

By Silvio Palazzi, M.D. 618 pages with 483 illustrations and 10 additional plates. Price $6.50. Milan, Italy, Ulrico Hoepli, 1953.

The author, who is director of the Postgraduate Dental School of Milan and Clinical Director of the Dental Department of the University of Pavia (Italy), has been associated all his life with teaching institutions. He knows the shortcomings of dental education in a country where a medical degree is required for the practice of dentistry without attendance at dental school.

Realizing the urgent need for a dental manual, he has written a text that will serve well as a guide for medical students choosing to practice dentistry. Its refreshing brevity and completeness makes it useful also to the general practitioner. Dr. Palazzi must be congratulated for giving this book to the dental profession.

The object of this new text is to give the student a concise and complete description of the various technics used in dental practice and to give a better understanding of dental diseases and their treatment.

A very interesting conception of general medicine in relation to oral medicine is discussed in connection with an outline of the diseases which should be included in the field of oral medicine. It is concluded that in the field of oral medicine all disease processes must be considered from a general medical point of view. The individual must be examined as an organic entity.

The section on orthodontics explains the present concept of dentofacial relationships in the diagnosis of malocclusions. The advantages of this new concept for a better under-

standing of the factors concerned in proper therapy are well emphasized.

In his discussion of prosthetics, the author has attempted to give due importance to the biologic factor, instead of limiting treatment of the subject to the mechanics of the operation.

The book closes with a brief review of dental history by E. Caudana (Turin).

V. Pallazo

TOPOGRAPHISCHE UND PRAKTISCHE ANATOMIE DES MUNDHÖHLENBEREICHES (TOPOGRAPHICAL AND PRACTICAL ANATOMY OF THE REGION OF THE ORAL CAVITY)

By E. Pernkopf. 145 pages (incomplete) with 42 illustrations, 12 in color. Not for sale in separate issues. München, Urban & Schwarzenberg, 1953.

This volume, the third issue of the *Die Zahn-, Mund- und Kiefer- Heilkunde* series, is planned as the first part of Volume 1. The first four chapters deal in detail with the anatomy of the exterior of the oral cavity, the skeletal-muscular structural wall, the fascial tissues and the mucous membrane. The fifth chapter is concerned with permanent and deciduous dentition. The sixth chapter, on blood vessels and nerves, ends abruptly after two pages. The remainder, 20 pages and 8 colored illustrations, will be contained in a subsequent issue.

The striking characteristics of this volume are the profuseness of detail and the clarity of the illustrations. Color is skillfully used for emphasis and contrast.

G. Nichols

TOOTHLAND A B C

By Harrison W. Ferguson, D.D.S. 27 pages with illustrations. Price $1.50. Dansville, N. Y., F. A. Owens Publishing Co., 1953.

In rhyme, this book tells children the facts of dental health from A to Z. Apparently it has been designed for children in the early elementary grades, as the large type and primer format suggest that it is to be read by beginning readers. On the other hand, the ues of terms such as "toothbuds" would presuppose verbal comprehension beyond that age, and many of the illustrations and verses require the additional explanation which an adult might give while reading.

Valuable instructions on toothbrushing and diet are presented in this book. Whether the interest of the child can be sustained until the message is presented is questionable. A four year old seemed to lose interest after "elephant," and a six year old found it hard to visualize teeth, as personalized here, in their actual setting in the mouth.

The format of the book is not as good as its verses. Illustrations need clarification. The copy type is large and readable, however; the paper is of good quality and the coloring is bright. Although the rhyming device makes learning easier, it also tends to prevent the reader from interrupting phrases which may need explanation.

Interested dentists like Dr. Ferguson are to be commended and encouraged to produce more dental health education material; however, this particular book does not match others which already are available.

J. Arden

THE SURGERY OF INFANCY AND CHILDHOOD

By Robert E. Gross, M.D., D.Sc., and William E. Ladd. 1,000 pages with 567 figures. Index. Price $16. Philadelphia, W. B. Saunders Co., 1953.

This new volume on pediatric surgery constitutes a report of stewardship and a summary of progress at the Children's Hospital of Boston. Children's surgery is not limited to an anatomical area of the body and has little of the eclat which surrounds general surgery. With the gradual development of the surgical specialist, an infant with a surgical ailment may receive inadequate care in many a community. Those who operate on adults are not at their best when called on to operate on an infant. It takes more than diminutive instruments to be effective. Vitally necessary is a knowledge of special pathology and of the newer methods of correcting the underlying condition. Excessive mortality rates are always a concomitant of unpreparedness in surgical undertakings in the young.

The author sums up his own vast experience in general children's surgery. He makes objective appraisals of the results and evaluates the surgical procedures accordingly. The book is incomplete in spite of the extensive range of surgical entities considered. It lacks discussion of many subjects which are a part of daily surgical practice.

Most valuable is the initial chapter on the preoperative and postoperative care so necessary in operations on any organ or tissue of

the body including the oral cavity. Of great help to the dental surgeon is the author's complete discussion of anesthesia in pediatric surgery. Discussion follows on all aspects of surgery in the various systems of the body except dental, neurosurgical, orthopedic, otolaryngologic and ophthalmological. Every entity is considered from all standpoints: etiologic, pathologic, symptoms, diagnosis, preoperative and postoperative procedures, therapeutic results and references. This is not the first book on pediatric surgery but is the best prepared to date.

I. Newton Kugelmass

A GUIDE TO MEDICAL AND DENTAL PHOTOGRAPHY

By Kenneth S. Tydings, S.P.E. 124 pages with 81 illustrations including photographs, microcloseups, tables and graphs. Price $1.95. New York, Greenberg, Publisher, 1953.

As the title of this publication indicates, it is a guide. Many excellent ideas are contained in the pages, but the book also contains some questionable statements.

For instance, the author suggests the use of photography for the matching of teeth by the dental technician. In color photography this procedure, of course, is practically impossible, for underexposure or overexposure would make exact matching impossible.

In addition the author states that the sharpness of a medical picture may save a life; a sharp picture will permit the physician to diagnose a case correctly. I do not believe that a diagnosis is made from a picture of the patient. A picture is usually taken after the diagnosis has been made.

It is stated that it is impossible to photograph blue prints without a red filter, but the author has omitted suggesting the use of a high contrast panchromatic film.

Under the title of lighting, the author says that it is necessary to polarize both the light source and the camera to avoid hot spot reflections. I don't believe that this is necessary if the illumination is placed at an angle of 45 degrees from the copies. Light reflects at the same angle it is received.

Camera extension must be considered when making copies and this important factor is omitted under the paragraph entitled "Exposure." I believe that noninterchangeable lenses are impractical because one always gets a flare or a hot spot.

If one were to cover the contents of this book completely and thoroughly it would require a review 15 times this length. The book is a guide and as such, of course, it is limited in scope. The author has many fine ideas. His description of clock circle lighting is well done and is a very good suggestion. He is to be commended for this work.

Waldemar A. Link

MEDICAL PUBLIC RELATIONS

By Edgar A. Schuler, Ph.D.; Robert J. Mowitz, Ph.D.; Albert J. Mayer, Ph.D. 228 pages with 91 tables. 10 appendixes. Price not listed. Ann Arbor, Mich. Edwards Brothers, Inc., 1952.

The authors utilize over 228 pages to discuss a public relations program of the Academy of Medicine of Toledo and Lucas County, Ohio, which they summed up on the 85th page as follows, "It is safe to conclude that paid newspaper advertising is not an effective means for communicating with the leadership group in the community." The report on 600 households sampled in the Lucas County area indicated that only 8 per cent knew about the Academy of Medicine as a result of the paid advertising.

This report may have been interesting to the authors and some members of the Toledo Academy of Medicine. The only excuse that we can find for its heavily weighted socio-economic questioning in Lucas County is the fact that this program was apparently born as the result of public criticism of certain economic aspects of medical practice in Toledo and vicinity.

The editing of the manuscript or of the printing job or both are poor—resulting in 12 acknowledged errata in a book as small as this.

H. Shirley Dwyer

HEALTH SERVICES FOR THE CHILD

By Edward R. Schlesinger, M.D.; foreword by Herman E. Hilleboe, M.D. 403 pages with 11 illustrations. Index. Appendix. Price $7.50. New York, McGraw-Hill Book Co., Inc., 1953.

The author has ably shown how to interweave preventive mental health knowledge into the fabric of child health services. The application of this knowledge to the social and emotional problems of parents and children offers strong hope of easing the stresses and strains of modern living. The causes of mental illness remain largely obscure, but exhaustive studies have indicated that much mental illness in adult life derives from emotional disturbances

which occur during early childhood. It follows that the greatest potential for the promotion of positive mental health in adulthood lies in the field of maternal and child health service.

Child health, the author aptly remarks, is inseparable from maternal health. Even before conception occurs, the attitudes of the parents toward marriage, parenthood, pregnancy and labor are of vital concern. The health of the mother during pregnancy and labor is reflected in the health and vigor of the newborn child. The critical neonatal period requires all the maternal and medical care possible to avoid infection and afford proper nutrition for growth and development.

It is in the preschool age that community health services come into their own as life-saving and life-preserving measures. Public health nursing services, child health conferences and health education services of local health departments reach out into the rural and urban homes in the community to provide health care services so important in the formative years. The school health services, the mental health and dental clinics, the clinics for handicapped children of all types—these are the facilities that enable the family physician and his host of consultants and other health teammates to utilize their professional skills where they will do the most good.

Health supervision requires the combined efforts of the parents, the physician, his cohorts and all health facilities in the community skillfully coordinated and geared to the age of the child, his physical, mental and emotional status. The method of integrating these multiple services and skills that vary with time and place has been demonstrated by the author with the realism that comes only from long experience with children in the home, the school, the clinic and the hospital.

I. Newton Kugelmass, M.D.

STRESS AND DISEASE

By Harold G. Wolff, M.D. 199 pages with 38 illustrations. Index. $5.50. Springfield, Ill., Charles C Thomas, 1953.

Stress is the interaction between external environment and organism, with the past experience of the organism a major factor in determining its reaction. Strain is the deformation in the organism that then ensues. The magnitude of the deformation and the capacity of the organism to withstand the strain determine whether or not there will be re-establishment of homeostasis or a "break" with disruption and death. The analogy to physics is less close in this phase since adaptation to loads, with resultant reduction in "stress and strain," is not as conspicuous in nonvital systems.

The common knowledge that man becomes ill when life circumstances are adverse and is healthy when they are propitious has been extended by precise measurements of bodily functions before, during and after periods of stress. From discussion of incidents at the bedside and in the laboratory portraying the relationship to bodily disease of specific situations, attitudes and emotions, the monograph moves toward considerations of disease arising in populations undergoing serious deprivations and sudden or violent social changes. The setting in which disease germinates assumes primary importance. Adaptive and protective patterns used in meeting day-to-day dangers and threats of danger are defined.

It is shown how the impact of man on man may be as seriously traumatic as the assaults of microorganisms, climate, chemical and physical forces. Disruptions, hindrances and threats stemming from the interaction of man on man evoke adaptive responses indistinguishable from those set off by other environmental forces. Affect and bodily changes are viewed as not being causally related but are viewed as separate manifestations of response to stimuli, tempered by previous experience.

Nineteenth century medicine stemmed from Claude Bernard's concept: He saw disease as the outcome of attempts at homeostasis in which adaptive responses to noxious forces, although appropriate in kind, were faulty in amount. The adaptive response to tissue damage, in its intensity, may be more destructive than the original assault.

An attempt has been made by the author to carry this concept of disease one step further. It is suggested that man, confronted by threats, especially as they involve values and goals, initiates responses inappropriate in kind as well as in magnitude. Such reactions, integrated for one protective purpose and inappropriately used for another, can damage or destroy him.

I. Newton Kugelmass

CONNECTIVE TISSUES

By Charles Ragan, M.D. 197 pages with 61 illustrations, 8 in color. Price $3.75. Packanack Lake, N. J., Josiah Macy, Jr. Foundation Publications, 1953.

This small volume consists of the transactions of the Fourth Conference on Connective Tissue Series held February 18-20, 1953, at Princeton, N. J. The transactions of each meeting of the various conference groups are published

and sold at cost. Every effort is made to preserve the informal nature of the meeting so that the reader may participate vicariously in the give-and-take of lively discussions.

These particular conferences are interested in furthering knowledge about connective tissues. In the conference under discussion, 11 participants were brought together to exchange ideas, experiences, data and methods. Because of the accelerating rate at which new knowledge is accumulating and because discoveries in one field so often result from information gained in another, channels must be established for the most effective dissemination and exchange of knowledge. This report is illustrative of the continual desire to integrate into one simple and consistent system the combined knowledge of outstanding scientists, which is usually presented from many different points of view.

It is a comprehensive piece of work and presents a well-rounded scientific analysis of the subject matter. In general the book provokes stimulating thoughts and will be enjoyable reading for those interested in connective tissues.

E. Alan Lieban

PAYING FOR MEDICAL CARE IN THE UNITED STATES

By Oscar N. Serbein, Jr. 543 pages. Appendixes. Index. Price $7. New York, Columbia University Press, 1953.

The Medical Payments Project was established by a grant from the Health Information Foundation to Columbia University to study the methods used in the United States to pay for medical care. The book, which is the Project's report, covers sources of funds for payment, methods of payment, the problem of care, prepayment plans, business and medical care, government programs, problem areas, prevention of disease, evaluation of present programs, and future development. Appendix A deals with medical provisions of workmen's compensation laws. Appendix B contains supplementary tables.

Much space is devoted to the incidence of illness, the cost of medical care, the need for medical treatment and the distribution of medical resources.

Dentistry receives but brief consideration because of the paucity of prepayment dental programs. However, it is recorded that 2.3 per cent of industry gives dental care.

The recent rather rapid growth of prepayment medical care plans seems to indicate that employers are becoming increasingly aware of the value of protecting the health of employees and of doing so through organized medical care programs.

Finally, the study of all plans shows that 73 per cent of them paid hospital care and 93 per cent paid physician's care. If this coverage of physician's care is possible perhaps it is also possible to establish prepayment programs for dental services. *Paying for Medical Care in the United States* should be made available to all who are interested in medical care.

R. M. Walls

THE SULFONAMIDES AND ANTIBIOTICS IN MAN AND ANIMALS

By J. Stewart Lawrence, M.D., M.R.C.P. and John Francis, M.Sc., M.R.C.V.S. Second edition. 482 pages with illustrations. Index. Price 42 s. net. London, H. K. Lewis & Co. Ltd., 1953.

The sections of this book which deal with chemistry, pharmacology and antibacterial actions will be of interest to many teachers and advanced students of bacteriology and pharmacology. The entire text is highly readable and liberally documented with references to the periodical literature.

Unfortunately, there are very few, if any, references to reports published in 1953 and less than 3 per cent of 1,750 references are to publications which have appeared since 1951. Therefore, the large portion of the book which is devoted to treatment of diseases and infections is not as up-to-date as other readily accessible sources of such information.

The book contains enough basic scientific material in unusually convenient, well-organized form to justify its acquisition by dental libraries. Advice concerning treatment with sulfonamides and antibiotics should be sought from more nearly current sources.

ANNUAL REPORT OF THE W. K. KELLOGG FOUNDATION (1952-1953)

145 pages with illustrations. No price listed. W. K. Kellogg Foundation, Battle Creek, Mich.

This is the second successive annual report of the Foundation made available to the public. The scope of the Foundation's interests includes agriculture, dentistry, hospitals, medicine, nursing, public health and general education. The activity of this organization is worldwide and its expenditures in 1952-53 in the fields listed approached four million dollars. Of this amount slightly over $95,000 was spent for dentistry, largely to improve professional education.

The introduction contains a statement of policy concerning the utilization of the Foundation's funds which reads as follows, "The Foundation has chosen to limit its activities to programs that are concerned with the application of knowledge rather than with its creation through research."

This reviewer questions the wisdom of the policy as it applies to the field of dentistry. It is a generally accepted fact that knowledge concerning the causes of dental disease is so limited that little other than reparative measures can be provided by the dental profession to existing dental defects.

This shows that the basic need in dentistry is for more research to discover preventive measures for dental caries, malocclusion and periodontal disease.

No part of the human body has more generally failed to withstand exposure to modern civilization than have the teeth and their investing tissues. Only through the discovery of mass preventive measures can the dental profession successfully combat the highly prevalent diseases of these dental structures.

It is to be hoped that this important philanthropic organization will lend its support to this great need.

F. C. Cady

L'EMPLOI DU GREFFON CUTANÉ CYLINDRIQUE DANS LES BECS DE LIÈVRE TOTAUX ET LES DIVISIONS PALATINES. (THE USE OF SMALL CYLINDRICAL CUTANEOUS GRAFTS IN TOTAL CLEFT LIP AND CLEFT PALATE)

By Jean Delaire. 63 pages with 25 illustrations. Price 400 francs. Paris, Julien Prelat.

This book is based on observations made in seven cases. The author points out that the use of cylindrical cutaneous grafts to replace more commonly used obturators for total cleft palate is quite new and that few such cases have been reported. He feels, however, that results obtained in the cases reported warrant expanded use of this method.

The need for the cylindrical cutaneous graft results from the contraindications and difficulties of classical operative technic and the hazards of obturators, the author states. The chief use, he says, would seem to be in the large anterior palatal cleft. Good results are obtained also in clefts of the palatal junction, the vestibule and the velum and for alterations of the lip.

Contraindications noted by the author are an unfavorable attitude on the part of the patient, a poor condition of tissues bordering on the cleft and a deficiency in the general physical condition of the patient.

The book explains in detail the entire technic, from the preoperative examination through preparation of the cutaneous graft to the final closing of the palate. Diagrams of each step and of the equipment used are clearly drawn. The seven cases are described in detail. The results and conclusions are summarized in the final chapters.

D. Zabin

DIE ZAHN-, MUND- UND KIEFER-HEILKUNDE: EIN HANDBUCH FÜR DIE ZAHN-ÄRZTLICHE PRAXIS (THERAPY OF THE TEETH, MOUTH AND JAWS: A MANUAL FOR DENTAL PRACTICE)

Edited by Karl Häupl, Dr.; Wilhelm Meyer, Dr. Dr., and Karl Schuchardt, Dr. Dr. For sale only in complete set of volumes. München, Urban & Schwarzenberg (1953, 1954).

Issue 1. 160 pages with 214 illustrations.

"Issue 1" of the projected *Zahn-, Mund- und Kiefer-Heilkunde* manual contains the first 160 pages of Volume V, "Orthopedics of the Jaws, Science of Material." The four sections appearing in this portion of the work are:

"Regularities, Irregularities and Their Manifestations" by K. Häupl.

"The Formation of the Deciduous Dentition and the Subsequent Dentition With Special Regard to Orthopedic Consequences" by K. Häupl.

"Etiology and Formation of Irregularities" by R. Bay.

"Analysis of Irregularities of the Jaws" by H. Wunderer.

As in all the volumes of this manual, the illustrations are clear, to the point and abundant. Features of special interest are the illustrations of the development of the temporomandibular joint, the illustrations of fetal dental irregularities and the description of the use of the symmetrograph and the symmetroscope in the determination of irregularities.

Issue 4. 160 pages with 207 illustrations.

"Issue 4" is the first part of Volume IV, "Dental Prosthetics." The first work of this portion is a discussion of "Relations of Dental Prostheses, Crowns and Bridges to Living Tissue" by Karl Häupl and Max Spreng. The harmful effects of incorrect adaptation and inappropriate materials are stressed; the illustra-

tions are detailed and profuse. The reader is left with the wish, however, that correct methods of adaptation and appropriate materials might be treated in a similar manner.

The incomplete second work, "Science of Articulation" by Rudolf Fischer, is far more than a manual. After a preliminary description of various types of articulation in animal and man, the author analyzes modern methods of determining the various types of jaw movement. His summary covers the development and forms of "occludors," articulators and registering apparatus for specific purposes. Many of the devices are shown in illustrations. The volume ends abruptly in the midst of a description of arrangements of chewing surfaces in natural and artificial teeth.

G. Nichols

CANCER LEARNING IN THE DENTAL SCHOOL

By Howard R. Bierman, M.D.; Leonard W. Towner, Jr., Ph.D.; David W. Galloway, M.A., and John W. Hazlet, D.D.S. 153 pages with illustrations. No charge. Berkeley, Calif., University of California Printing Department, 1954.

In 1947 and 1948 the National Cancer Institute initiated programs to improve the teaching of cancer in medical and dental schools. To evaluate the effectiveness of the program a Cancer Achievement Test was given nationwide. The project was administered by the Cancer Research Institute of the University of California. Some 73 medical and 34 dental schools participated.

The program was designed to measure improvement in student knowledge of cancer as students advanced through school, to determine relationships between patterns of instruction and learning and to compare the learning progress of medical and dental students.

In the dental schools the field of neoplastic diseases was chosen for the project because it involves all disciplines of the dental school. Students were tested annually so that the level of knowledge at each of the four years could be assessed and a class-by-class comparison could be made of student knowledge in the various schools.

Information was gathered on curriculum, program, method of teaching, instructors, student motivation and selection and many other factors.

The book reviews the history of the examination, discusses how the tests were developed, sets forth the data gathered and presents the conclusions which were drawn from the study. The information is provided in detail. Tables are plentiful.

The tests showed that the average freshman knew little about cancer and the report recommends more cancer teaching at the freshman level. There was a direct correlation between the amount of clinical work done by students and their cancer knowledge. The typical senior dental student knew more about characteristics and treatment than about diagnosis. This finding would not be considered desirable by those authorities who feel that the role of the dentist lies primarily in diagnosis. The report recommends better integration of cancer material into the dental curriculum.

D. Zabin

DEVELOPMENTAL PSYCHOLOGY

By Elizabeth B. Hurlock, Ph.D. 556 pages with illustrations. Index. Price $6. New York, McGraw-Hill Book Co., Inc., 1953.

This book is written as a text for an academic course in psychology. The author attempts to describe a universal personality pattern at each age level from infancy through old age. Her thesis that behavior is fairly uniform for all individuals at any given age is the physiological, mechanistic approach which dominated psychological theory at the turn of the century. Lip service is given to the importance of parental attitudes but the material cited does not explore or stress this importance in explaining the genesis of personality patterns. For example, the discussion of sleeping, eating and elimination habits stresses the presence of universal physiological patterns at certain ages while the important effect of maternal attitudes is all but ignored.

Developmental Psychology is a readable and scholarly description of typical behavior at all ages. However, it is not likely to increase the depth of understanding of normal or pathological behavior and probably will not be helpful to readers of THE JOURNAL in dealing with patients.

Elizabeth Levitin

Current Literature

HISTOPATHOLOGY OF ENAMEL CARIES IN REFLECTED LIGHT

Zdenek Mezl. J. Canad. D. A. 20:17 Jan. 1954.

The histological examination of enamel caries by reflected light offers several advantages. Specimens are easily prepared for examination and can be studied in their natural state without artefacts. The technic makes possible the study of both quantitative and qualitative changes. The carious lesion can be studied easily at various levels by progressive grinding of the tooth.

This report is based on observations of several hundred recently extracted human teeth, examined by reflected light with the Ultropak (Leitz) microscope.

The following phenomena can be determined as characteristic features of the carious process: (1) demineralization with increase in organic matter; (2) pigmentation; (3) the intermittent character of the process; and (4) demineralization, either resulting in cavity formation or alternating with demineralization and preserving a continuous surface of the enamel.

The possibility of studying separately the changes of the prisms of the prism sheaths and of the interprismatic substance opens new approaches to the study of the histopathology of the enamel.

Wesley O. Young

THE EFFECT OF TOOTHBRUSH TYPE ON GINGIVAL HEALTH

J. J. Hiniker and B. K. Forscher. J. Periodont. 25:40 Jan. 1954.

Five types of toothbrushes supplied by a single manufacturer were used by 90 male dental students to investigate the effects on gingival health of various types of toothbrushes and to determine the feasibility of a large scale study of a similar nature. The students were divided into five groups, each group reflecting the varying degrees of gingival health in the same proportion as the whole. The modified Stillman-McCall method of toothbrushing was used, with no directions given concerning frequency of use or choice of dentifrice. Results were evaluated on the basis of three clinical examinations and corresponding Kodachrome transparencies.

The following conclusions were drawn: 1. No one type of toothbrush is the perfect answer for all mouths. 2. The results for the various brushes were very similar. 3. Brush 4, soft nylon multitufted, appeared slightly superior; Brush 1, soft natural bristle 3 row, was a close second.

Sumter Arnim

OPERATIVE DENTISTRY UNDER GENERAL ANESTHESIA FOR DIFFICULT PATIENTS

M. M. Album. J. Den. Children, 20:156 4th quarter 1953.

Dental treatment for recalcitrant and handicapped children has been thought to be exceedingly difficult. It is possible, however, to provide adequate dental treatment for these patients by the use of a general anesthetic under hospital conditions.

The patient is admitted to a hospital and given a complete physical examination, including a chest roentgenogram, a blood cell count, clotting and bleeding time tests, test of hemoglobin percentage, and a physician's evaluation of the patient's state of health. A complete physical examination is neccessary to detect persons who would constitute an anesthetic risk and to allow the anesthesiologist to make a better appraisal of those chosen for treatment.

One hour before the operation children are given morphine sulfate, meperidine hydrochloride, scopolamine or pentobarbital sodium. The latter is given orally or rectally.

Trichloroethylene, combined with nitrous oxide and oxygen plus the muscle relaxant succinyl choline, was found to produce the best anesthesia. Anesthesia is induced by nitrous oxide and oxygen in a 3:1 ratio by means of a face mask and re-breathing bag. Trichloroethylene is added to the mixture with a standard ether vaporizer. Succinyl choline in 5 per cent glucose is administered by intravenous drip, which is continued throughout the operation. Intubation is performed with a nasotracheal tube. The anesthesia is maintained with a 2:1 mixture of nitrous oxide and oxygen plus trichloroethylene vapor. This anesthesia technic can be used safely for a long period of dental treatment.

On completion of the dental treatment, a complete cleansing of the mouth, the pharynx and the endotracheal airway is necessary to prevent the aspiration into the lungs of any tooth debris or amalgam.

William F. Via, Jr.

A NOTE ON THE RAPIDITY OF THE PRODUCTION AND REMOVAL OF LACTIC ACID FOLLOWING THE INTRODUCTION OF A 10 PER CENT GLUCOSE SOLUTION INTO THE MOUTH

R. L. Hartles and Norma D. McLean. Brit. D. J. 95:63 Aug. 4, 1953.

An experiment was conducted to determine the rate at which carbohydrate can be cleared from the oral cavity, the rapidity with which lactic acid can be formed from carbohydrates and the length of time the lactic acid is likely to persist in the mouth. The glucose rinse method was used to introduce the carbohydrates into the mouth, and within five minutes the determinations for lactic acid in saliva were made.

The subjects were nine students with varying degrees of caries. Each subject provided 2 milliliters of saliva, stimulated by tongue and cheek movements but without the use of wax. This sample was analyzed immediately for lactic acid. At time zero, 5 milliliters of glucose solution, 10 per cent weight by volume, was placed in the mouth and held there for one minute. Tongue and cheek movements insured that the solution reached all parts of the mouth. At the end of one minute the solution was swallowed. Samples of saliva, 2 milliliters each, were collected as before, 5, 15, 30 and 60 minutes after time zero; and each sample was analyzed for lactic acid.

It was observed that after a single rinse with 5 per cent glucose solution, there was a rapid production of lactic acid and that the maximum level was reached in from 5 to 12 minutes. It was observed that lactate concentration rapidly returns to normal and that there is a limit to the amount that can be produced at any given time in a particular mouth, depending on the buffering capacity of saliva. It is postulated that if the buffering capacity of saliva is low, the acid produced will not be neutralized and, conversely, if the acid production is low or the buffering capacity high, the acid will be neutralized.

Anand P. Chaudhry

RECENT TRENDS IN ORTHODONTICS

G. V. Fisk. J. Canad. D. A. 20:65 Feb. 1954.

A most important advance in orthodontics resulted from a revision of basic concepts. During the early stage of the development of the specialty, the popular concept was that normal occlusion was nature's plan. When deviations from normal occlusion developed, the causes were attributed to local, congenital, metabolic factors or to disease. Consequently, the early development of orthodontics was technological.

After years of the use of many varieties of mechanical appliances, it was evident that in many cases there was failure to attain perfection in interdental relations. Hence the conclusion is inevitable that all individuals are not similarly endowed in their inherent potential for the attainment of a perfect dentition.

Evidence is accumulating to indicate that the genetic constitution is a primary factor in the problem. The evidence of genetic linkage in jaw malformations, particularly those of the premaxilla, strongly supports the theory of inheritance.

Frequently environmental factors combine with inheritance in the etiology of malocclusion. Habits, abnormalities of muscular tissues of the mouth, posture pressure, constitutional diseases, abnormal functioning of the ductless glands and faulty metabolism are some of the factors which may require investigation before the institution of orthodontic therapy.

The greatest influence on dentistry during the past quarter century has been the increasing value and interest in research. Valuable information respecting the growth mechanisms of the jaws and the face has accumulated, particularly with reference to the sites of growth and their activity. Further data have been gathered in connection with the changes occurring in the transitions from the deciduous to the mixed dentition and from the mixed to the permanent dentition.

Studies directed toward a determination of the favorable stages of dentition for the commencement of orthodontic treatment indicate a trend toward treatment of the younger age groups, with special emphasis on children in the mixed dentition stage.

Charles R. Baker

OCCLUSAL CORRECTION

C. H. Graham. D. J. Australia 25:181 Sept. 1953.

A conservative practical procedure has been devised for the correction of occlusal disharmonies in complete and partial denture prostheses. In the construction of artificial dentures, in spite of adherence to exacting technics, there is always the possibility of errors due to the human factor and discrepancies caused by the physical behavior of dental materials.

Provided that anteroposterior and lateral balances developed in the construction of the dentures are correct, in cases of slight occlusal

error, selective grinding should be employed to preserve these balances; but in cases of considerable error, one or both dentures should be reconstructed and reset in order to insure a minimum of damage to important balancing cusps.

A careful analysis of the occlusal relationship of the natural dentition in centric relation and various balancing positions is recommended in partial denture cases before the steps of construction are instituted so that advantageous modification of cusp height and form may be undertaken to insure harmony of relationship.

William W. Hurst

THE RELATIONSHIP BETWEEN PAIN AND CHANGES IN THE DENTAL PULP FOLLOWING THE INSERTION OF FILLINGS

Ivor R. H. Kramer. Brit. D. J. 46:9 Jan. 5, 1954.

Experimental fillings were inserted in a total of 205 teeth, of which 27 were eliminated from the series for various reasons. The patients ranged in age from 14 to 25 years. The purpose of the experiment was to determine the relationship between occurrence of symptoms and pulp changes in teeth extracted even though they had caused no pain. This study represents part of an investigation into the response of the human pulp to self-polymerizing acrylic restorations.

After intervals ranging between 30 minutes and 10 months the teeth were extracted and placed in Formol saline solution; then paraffin or double-embedded sections were prepared. Each tooth was sectioned in the long axis in a plane passing through the deepest part of the cavity and at right angles to the pulp surface. The use of three criteria—polymorphonuclear infiltration into the odontoblast layer, "generalised cellular infiltration" of the pulp, and fluid disturbance—permitted the assessment of the inflammatory reaction on a quantitative basis.

The following conclusions were drawn:

1. Incomplete formation of the apexes may have influenced the pain experience.

2. The pulp changes in these experiments resulted from the insertion of irritant materials into noncarious teeth, and the results do not necessarily indicate that the observations would have been the same if the pulps had been damaged by caries.

3. Gross fluid disturbance occurred in association with two filling materials.

4. Some patients may have forgotten minor discomfort of short duration; however, under certain circumstances, acute severe pulp disturbance can occur without causing pain. It is therefore unwise to judge the toxicity to the pulp of a filling material on the basis of pain experience after filling.

Sumter Arnim

EARLY TREATMENT OF CLEFT-LIP AND CLEFT-PALATE

W. G. Holdsworth. Brit. M. J. Feb. 6, 1954, p. 304.

In 100 cases of cleft lip and cleft palate, both lip and palate were affected in 51 cases, the palate alone in 36 cases, and the lip alone in 13 cases. All types of lesions were more common in males. In 18.8 per cent of the cases, there was known to be a relative of the child with a cleft. Six children had associated congenital abnormalities, but in none was operation impossible.

Sixty-one operations were performed for primary lip closure and 85 for palate closure.

Of the children born with cleft palate, 47 per cent are now speaking without detectable abnormality, and a further 38 per cent have only minor defects. Of the patients operated on under the age of 9 months, 77 per cent now speak normally.

James Springer

DEVELOPMENTAL DISTURBANCES AND MALOCCLUSION OF THE TEETH PRODUCED BY ANDROGEN TREATMENT IN THE MONKEY (MACACA MULATTA)

C. M. Seipel. Am. J. Orthodont. 40:37 Jan. 1954.

Of those factors influencing body growth, the sex hormones have received little attention as far as dental and maxillofacial development is concerned. Seemingly, there is a far step between the teeth and the gonads; but in recent years evidence has appeared which throws a new and interesting light on this question. Changes in the developmental time curve and maturation processes have a decided influence on the relations of the teeth and jaws.

A Class III malocclusion, with the lower jaw in a protrusive open-bite position, has been observed in monkeys treated with large doses of testosterone propionate. This shift of occlusion from the normal bite position might be attributed to several causes. First, there is less reduction in size of the mandibular body than of the upper jaw. Secondly, there is an arrest

of growth in a dorsolateral direction of the porion and the articular region of the skull. These factors tend to give the mandible a more ventral position and a Class III malocclusion of the teeth. Finally, the decreased oral space with the concomitant muscular hypertrophy and tongue pressure likewise advances the mandible ventrally. The open bite can be explained by this tongue pressure as well as by the mandibular malformation with the arrest of condylar growth.

William F. Ford

AN EMPIRICAL STUDY OF THE ETIOLOGY OF DENTAL FEARS

Edward Joseph Shoben, Jr., and Loren Boland. J. Clin. Psychology 10:171 April 1954.

It is a widely accepted premise that fear on the part of some dental patients influences unfavorably their seeking and continuing dental treatment or their cooperating with the dentist rendering such treatment. This study is directed toward disclosing the psychological background of such fears. The research is of a preliminary and exploratory kind only, and more definitive studies are necessary.

Data were obtained from two-hour interviews with 15 self-admittedly fearful dental patients and 15 nonfearful dental patients. Chief among the factors causing fear were unfavorable family dental experience and unfavorable family attitude toward dentistry. The patient's personal traumatic dental experience was much less of a factor in fear causation than the influence of members of the family. Apparently, fears usually begin before the patient reaches the dentist. This study substantiates the old axiom that "education, good and bad, may start in the home."

Richard C. Leonard

THE REMOVAL OF POCKET AND ATTACHMENT EPITHELIUM IN HUMANS: A HISTOLOGICAL STUDY

Melvin L. Morris. J. Periodont. 25:7 Jan. 1954.

Curettage was performed on the epithelial linings and attachments of pockets of 15 patients, and 14 soft tissue biopsies were obtained and examined for the purpose of resolving conflicting reports on curettage.

The following results were observed:

1. In cases where only curettage was performed, epithelium always remained near the gingival margin; in two cases, epithelial clumps were retained in the hemorrhage.
2. In nine cases, where in addition to curettage gingival marginal rims of 0.5 to 1.0 mm. were removed and where pockets were irrigated and curettage was timed to approximately half a minute for each region covered by a stroke of the instrument, with the exception of remnants in the hemorrhage in one instance, all epithelium was removed.
3. The addition of caustics appeared completely unnecessary.
4. Pocket and attachment epithelium can be removed completely by this modified technic.

Sumter Arnim

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VANADIUM, A CARIES-INHIBITING TRACE ELEMENT IN THE SYRIAN HAMSTER

Carlos F. Geyer, p. 590.

LACTOBACILLI AND DENTAL CARIES IN THE HAMSTER

Edith Zak Helman and David F. Mitchell, p. 596.

A study was made to determine whether lactobacillus counts are indicative of current and possibly future caries activity in hamsters. If so, a useful tool would be available by which it would be possible to determine the influence of various factors on caries incidence before the end of the usual experimental period.

A micromethod for the determination of lactobacilli and other organisms in hamster saliva was developed as well as a simplified method for scoring caries, in which a "grid" is used in the eyepiece of the microscope to measure the area of the carious lesions.

No correlation was found between caries experience and oral lactobacillus counts of 40 adult hamsters maintained for 100 days on 3 different diets: nonsugar, high-sugar, and nonsugar plus water containing 20 ppm of sodium fluoride.

A limited number of offspring of the females received the diets until 21 days of age and were then fed a high-sugar diet for 100 days. Significant correlation ($P = .007$) was obtained between the occlusal scores and lactobacillus counts taken one month prior to sacrifice but not between the occlusal scores

and lactobacillus counts taken at the time of sacrifice.

It is tempting to postulate an early caries association with *Lactobacillus acidophilus* in the hamster; however, contamination by fecal *L. acidophilus* as a result of coprophagy leaves the significance of the observations open to question. This conclusion is substantiated by the fact that a significant correlation ($P = .001$) was found between the lactobacillus and coliform counts of the saliva in the adult hamsters.

ACID PRODUCTION IN SALIVA IN RELATION TO AIR CONTACT

Bruno Kantorowicz and Otto Birman, p. 601.

Experiments *in vitro* showed that the production of acids in glucose-saliva mixtures depends considerably on the pO_2 (partial pressure of oxygen) of the mixture. At low pO_2 the production of acids is much increased. In experiments where it is relevant, the question as to whether there is more or less contact with air should be taken into consideration.

THE ESTIMATION OF SAMPLE SIZE IN EXPERIMENTS. II. USING COMPARISONS OF PROPORTIONS

Neal W. Chilton and John W. Fertig, p. 606.

For comparison of a sample proportion with a "universe" proportion and for comparison of two sample proportions, the size of samples necessary for statistical significance to be asserted at different levels of significance and powers of the test can be determined by formulas. By using the percentage table, the reader can determine rapidly the size of the samples necessary for significance to be asserted, for instance, at the 1 per cent level of significance with 99 per cent power or at the 5 per cent level of significance with 95 per cent power. If the reader assumes the smaller true proportion, he can read the estimated sample sizes as soon as he knows how much larger the other true proportion is to be.

THE CLASSIFICATION OF NONHEMOLYTIC STREPTOCOCCI RECOVERED FROM BACTEREMIA OF DENTAL ORIGIN

Frederick W. Kraus, Diana W. Casey and Vilma Johnson, p. 613.

One hundred and sixty strains of alpha or gamma hemolytic streptococci were cultured from the blood of 78 patients after 94 extractions of teeth. Almost a third of the strains reacted to Lancefield's group antiserums. Almost half of all strains were classified as *Streptococcus mitis;* almost an eighth could not be classified. Only 5 strains were identified as *Streptococcus salivarius,* a species very common in the mouth; and 5 other strains were identified as *Streptococcus sanguis,* a species frequently associated with endocarditis. Specific strains were not characteristic of individual patients.

THE TEMPOROMANDIBULAR JOINT IN VITAMIN C DEFICIENCY

Barnet M. Levy and Robert J. Gorlin, p. 622.

A TEST FOR THE PURITY OF POWDERED ENAMEL

William E. Hutton, p. 626.

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A SERIAL STUDY OF THE EFFECTS OF FINGER-SUCKING

Allan T. Ruttle, William Quigley, John T. Crouch and George E. Ewan, p. 739.

Serial orthodontic models of 36 children with the finger-sucking habit and 42 children without the habit were studied and measured in the child development laboratory at the University of Michigan. The records covered periods up to 167 months. Some children still had the habit, while others had begun orthodontic correctional treatment or had stopped the habit voluntarily.

Each set of models in each series was observed and measured; and the type of arch, the relationship of the molars (Angle) and the relationship of the cuspid teeth were recorded. Overbite, overjet and width of arch at each posterior tooth also were measured and recorded.

The results showed that the finger-sucking habit modifies arch form, incisor position and spacing, overjet and overbite. The effect on mandibular arch width is insignificant. Maxillary arch width, with the infrequent exception of the permanent incisor region, is unaffected. The effect on the occlusion of the molars merely approaches statistical significance and is not clinically significant.

ODONTOGENESIS OF THE RAT MOLAR: PRENATAL STAGE

William Lefkowitz, Charles F. Bodecker and Dorothy F. Mardfin, p. 749.

The histogenesis of the rat molar, which is used in many biological investigations, was studied in a series of molars 24 hours old. By the use of a modification of the Long and Evans method, embryos of known age were secured. In all, 156 embryo heads were sectioned and stained with hematoxylin and eosin. The daily development, from 13 days *in utero* to birth, was recorded in detail.

THE PERIODONTIUM AND SALIVARY GLANDS IN THE ALARM REACTION

Gerald Shklar and Irving Glickman, p. 773.

WATER-SOLUBLE MUCOPROTEINS OF THE GINGIVA

Milton B. Engel, p. 779.

A METHOD OF RECORDING MASTICATORY LOADS

D. J. Anderson, p. 785.

UTILIZATION OF CONSTANT EXPOSURE FACTORS FOR INTRAORAL ROENTGENOGRAPHIC STUDIES

William A. Curby and Arthur H. Wuehrmann, p. 790.

Film density measurements were made of the same five steps of a 19 step aluminum step-tablet with Kodak no-screen film at peak kilovoltages, ranging from 110 to 50, and at various milliampere seconds. With a suitable light transmission density as a standard, the milliampere second values which would produce this common transmission density at the various kv.p. levels were determined. Ma. second values which would produce film densities within an arbitrary five unit density change on either side of the common transmission density also were recorded.

The percentage of Ma. second change necessary to cover the total ten unit density change was calculated, and it was found that the percentage of Ma. second change at 95 kv.p. was approximately half that necessary at 50 kv.p. and 40 per cent less than that required at 65 kv.p. These figures suggest that at a constant Ma. second value it is possible to demonstrate 40 to 50 per cent greater range of tissue density at 95 kv.p. than at lower potentials.

An optimum constant Ma. second value between 10 and 15 at 95 kv.p. was established for the various regions of the mouth and for different age and weight groups. This Ma. second value pertains to the equipment described, to be used with a 23 inch target-to-film distance, Kodak ultra-speed film, 0.5 mm. of aluminum filtrations, a peak kilovoltage of 95 and the recommended standard developing procedures.

THE EFFECT OF SINGLE AND FRACTIONATED DOSES OF SELECTIVELY APPLIED X-RAY IRRADIATION ON THE HISTOLOGIC STRUCTURE OF THE MAJOR SALIVARY GLANDS OF THE RAT

William G. Shafer, p. 796.

The effects of single and fractionated doses of locally applied x-ray irradiation on the histologic structure of the major salivary glands of the rat were studied. With single doses of irradiation varying from 480 r to 3,500 r, alterations characterized by increasing degrees of inflammation and degeneration were noted. With fractionated doses of irradiation varying from 4,500 r to 8,000 r, the alterations noted were merely more severe forms of the inflammatory and degenerative conditions observed after single-dose irradiation.

No histologic changes could be demonstrated which were not reversible in type. The minor structural alterations are not compatible with the known physiologic alterations. Studies utilizing refined histochemical technics may help clarify this disparity.

THE INCIDENCE OF DENTAL CARIES IN HAMSTERS RECEIVING TWO DIFFERENT WATER-SOLUBLE FLUORIDES AT LOW CONCENTRATIONS

Arthur W. Radike and Joseph C. Muhler, p. 807.

Stannous fluoride administered in the drinking water at a fluoride level of 10 ppm was shown to be superior to a similar concentration of sodium fluoride in the ability to reduce the incidence of dental caries in the hamster, both in respect to the severity of the caries attack and to the number of teeth affected. Less fluorine is stored in the skeletal system when stannous fluoride is administered in the drinking water than when an equal concentration of sodium fluoride is administered. Judged by analysis of the femurs for calcium and phosphorus, no disturbance in calcification is noticed when either salt is used. The

reason for the superiority of stannous fluoride in reducing dental caries in the hamster is not understood.

A new method of evaluating the severity of dental caries in small animals was developed in an attempt to provide a simple and adequate method for recording dental caries in the laboratory animal.

THE INFLUENCE OF LATITUDE AND DISTANCE FROM SEACOAST ON DENTAL DISEASE

James M. Dunning, p. 811.

CARIESLIKE ENAMEL CHANGES BY CHEMICAL MEANS

F. C. Besic, p. 830.

Carieslike changes in the enamel are produced in extracted human teeth when they are exposed to various acid solutions containing less than maximal calcium and phosphate ion concentrations. Such changes are produced with lactic, acetic, hydrochloric and carbonic acid solutions containing specified concentrations of calcium and phosphate ions.

When no such ions are added to the acid solutions, carieslike changes do not occur in enamel exposed to such solutions. Instead of a partial dissolution of the enamel salts, typical in true caries, a total dissolution of the inorganic components occurs.

Acid solutions with maximal concentrations of calcium and phosphate ions produce no change on intact enamel *in vitro*.

THE AMOUNTS OF FOLIC ACID AND VITAMIN B_6 IN SALIVA

Shirley L. Kaufman, George J. Kasai and Stewart A. Koser, p. 840.

Microbiological assays of the saliva content of folic acid and of vitamin B_6, including substances with folic acidlike or vitamin B_6-like activity that stimulate growth of oral lactobacilli, gave the following results. For folic acid, analyses of 51 saliva samples from 20 persons, mostly young adults chosen without regard to their caries experience, gave an average figure of 0.024 microgram per milliliter. The extreme range was 0.003 to 0.075, with 70 per cent of the values falling between 0.008 and 0.039 microgram per milliliter.

For vitamin B_6, with pyridoxal hydrochloride used as the standard, analyses of 52 saliva samples from 17 persons in the same category gave the average figure of 0.006 microgram per milliliter. The extreme range was 0.001 to 0.017, with 75 per cent of the values falling between 0.003 and 0.012 microgram per milliliter. These amounts of folic acid and vitamin B_6 are sufficient for definite growth and acid production by oral lactobacilli and, in some instances, for maximal or near maximal growth and acid production when other nutrients are present.

INVESTIGATIONS ON THE OCCURRENCE AND SIGNIFICANCE OF CITRIC ACID IN THE SALIVA

Yngve Ericsson, p. 850.

Citric acid is one of the chemical causes of dental erosion. Acid dissolution of the salts of the teeth is an obvious mechanism in this effect; the calcium-combining property of the citrate ions also may have a role by increasing the solubility of the mineral components of the teeth.

The purpose of this investigation was to determine the possible effects of intraoral concentrations of citrate on the solubility of calcium phosphate in saliva. The report was divided into two parts: (1) determination of the variations with time of citrate concentrations in saliva after ingestion of a citric acid-containing food (orange) and beverage (grapefruit juice) and (2) determination of the solubility of the enamel apatite in saliva in the presence of comparable citrate concentrations.

The citrate concentration of the saliva was increased after the test ingestions by intraoral retention. Values from 1 to 3 mm. per liter were observed two minutes after ingestion. The values decreased rapidly during the next eight minutes. Citrate concentrations of this strength had no apparent influence on the solubility of the enamel apatite in the saliva, as tested in equilibrium experiments in the pH range 5 to 7.5.

The results seem to justify the clinically significant inference that no prolonged increase in solubility is to be expected from the ingestion of citrate-rich common foods or beverages, however rich the citrate concentration may be.

DEMINERALIZATION OF HARD TISSUES BY ORGANIC CHELATING AGENTS AT NEUTRAL pH

Gordon Nikiforuk and Leo Sreebny, p. 859.

The sodium salts of ethylenediamine tetracetic acid form soluble nonionic chelates with calcium and other metallic ions over a wide pH range. A 0.5 molar solution of the sodium salt of ethylenediamine tetracetic acid

neutralized to a pH of 7.4 by hydrochloric acid makes a suitable demineralizing medium for small specimens of bone and tooth tissue. The solutions demineralize bone specimens at a rate about a seventh that of acid solutions and about seven times that of a neutral decalcifying solution of magnesium citrate. Higher temperatures increase the rate of demineralization. Tissue demineralized by ethylenediamine tetracetic acid possesses excellent staining properties.

AN EFFICIENT WATER SYSTEM FOR SMALL LABORATORY ANIMALS

Paul H. Keyes, p. 868.

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THE EFFECT OF CORTISONE ON THE HEALING OF EXTRACTION WOUNDS IN THE RAT

William G. Shafer, p. 4.

A STUDY OF AMALGAM CONDENSATION PROCEDURES WITH EMPHASIS ON THE RESIDUAL MERCURY CONTENT OF THE INCREMENTS. I. STRENGTH, FLOW, AND DIMENSIONAL CHANGE

Marjorie L. Swartz and Ralph W. Phillips, p. 12.

Amalgam was condensed by four different procedures for the removal of mercury from the individual increments during its condensation. In none of the procedures were increments used where the mercury content was either insufficient or too great for practical use. Both hand and mechanical condensing methods were employed. No correlation could be noted between the physical properties or residual mercury content and the specific method of packing.

From the work completed thus far, it appears that if a fundamentally sound technic for removing mercury from the individual increments is accompanied by a carefully standardized condensation procedure it makes little difference in the physical properties of amalgam which technic is employed for removing the residual mercury; however, there are many factors which remain to be studied before definite conclusions can be reached.

ELECTRON MICROSCOPY OF CARIOUS DENTIN

Sol Bernick, O. Warren and R. F. Baker, p. 20.

Detailed histological studies of carious dentin were made with the electron microscope and with ultrathin sections. The following conclusions were reached:

Zones of degeneration vary with the degree of bacterial invasion. The most superficial zone is characterized by complete decalcification and decomposition of the dentin. A second zone is the region of incipient decalcification in which the bacteria have invaded the tubules. In this region sclerosed tubules are found with their lumina obliterated by either a homogeneous or a calcified material. Collagen fibrils of 640 A striations also are evident in this region. In the deepest layer there are a few tubules which contain microorganisms.

THE EFFECT OF A TYPICAL INFANT'S DIET ON THE CARIES INCIDENCE OF THE SYRIAN HAMSTER

Howard C. Elliott, Jr., and Ward Pigman, p. 27.

Many common formulas for infants' food have compositions generally similar to those which have been found in numerous investigations to cause development of extensive dental caries in rats and hamsters. The common formulas consist primarily of some kind of commercially processed carbohydrate and of milk in some form with various types of vitamin supplements.

In general agreement with earlier work, it was shown in this study that diets composed of about 30 per cent whole dry milk and about 66 per cent sucrose, with or without uncooked starch, cause the development of caries in hamsters. These results were obtained in a shorter period than usual by placing 17 day old hamsters on the experimental diets for 58 days.

Each experiment was carried out at three different times, and each diet was administered to approximately 25 animals, fairly evenly distributed according to sex. With one common type of formula in which the carbohydrate was enzyme-hydrolyzed starch, although the amount of total water-soluble carbohydrate was similar to the amount in the cariogenic diets, relatively little caries was produced in 58 days. This result may have been due to the specific type of carbohydrate in this formula or perhaps to the better nutritional qualities

of the diet. The stock laboratory diet used for a control contained 30.2 ppm fluoride.

STUDIES ON STANNOUS FLUORIDE AND OTHER FLUORIDES IN RELATION TO THE SOLUBILITY OF ENAMEL IN ACID AND THE PREVENTION OF EXPERIMENTAL DENTAL CARIES

Joseph C. Muhler, William H. Nebergall and Harry G. Day, p. 33.

Several different compounds of tin possess the ability to reduce the incidence of dental caries in the rat when administered in the drinking water at a fluorine level of only 10 Gm. per milliliter. Knowledge of the level of fluorine administered in the drinking water or stored in the skeletal system does not provide a safe basis for judging the degree of caries reduction which may occur.

Increasing the pH of stannous fluoride in solution decreases its effectiveness in reducing dental caries in the rat. Freshly prepared solutions of stannous fluoride at approximately pH 3.0 result in the storage of less fluoride in the skeletal system than does sodium fluoride; however, increasing the pH of the stannous fluoride solution increases the storage of fluorine in the skeletal system to values similar to those for sodium fluoride. The effect of fluorides on enamel solubility seems to parallel their effect in reducing the incidence of dental caries in the rat.

EFFECTS OF SEVERAL FLUORIDE REAGENTS ON THE SURFACE STRUCTURE OF POWDERED DENTAL ENAMEL

Robert B. Fischer, Joseph C. Muhler and Carl J. Wust, p. 50.

Electron and x-ray diffraction studies were made of powdered dental enamel after it had been treated with several different fluoride reagents. The following results were observed. Potassium fluoride causes a transformation of the apatite structure to one of calcium fluoride; the change is predominantly on the surface, and the rate of transformation increases as the pH is lowered.

Sodium monofluorophosphate does not cause any change of apatite structure to calcium fluoride structure. Sodium silicofluoride causes a transformation to calcium fluoride; but the rate is slower than with an alkali fluoride, and the change develops within the particle as well as on the surface. Stannous fluoride causes a replacement of the surface apatite structure with an amorphous substance. Stannous chloride treatments result in practically no alteration of the original apatite structure.

THE RELATIONSHIP OF TITRATABLE ACIDITY, TITRATABLE ALKALINITY, AND pH TO THE INCIDENCE OF DENTAL CARIES

Naomi C. Turner, James H. Scribner and Jack T. Bell, p. 55.

THE AMINO ACID COMPOSITION OF PROTEINS ISOLATED FROM THE HEALTHY ENAMEL AND DENTIN OF CARIOUS TEETH

W. C. Hess and C. Lee, p. 62.

LONGITUDINAL DATA ON ERUPTION AND ATTACK OF THE PERMANENT TEETH

John T. Fulton and Bronson Price, p. 65.

Serial records of 100 Cleveland school children, covering a period of nine years, were analyzed. Curves plotted from the data showed considerable variation. Curves based on cross-sectional studies tend to conceal plateaus. The median ages at which 14 pairs of teeth erupted indicated that the plateaus are caused by the "batching" of teeth in respect to time of eruption.

Since serial records are of unique value in measuring effectiveness of treatment, the data on 266 carious first permanent molars of children under the age of ten also were studied. Of the 121 treated teeth, only 17 per cent were lost during the period studied; of the 145 untreated teeth 88 per cent were lost.

HORMONAL CONTROL OF TOOTH ERUPTION. I. THE EFFECT OF THYROIDECTOMY ON THE UPPER RAT INCISOR AND THE RESPONSE TO GROWTH HORMONE, THYROXIN, OR THE COMBINATION OF BOTH

L. J. Baume, H. Becks and H. M. Evans, p. 80.

In the first of three studies on the hormonal control of tooth eruption, 60 male and female rats of the Long-Evans strain were subjected to thyroidectomy at birth. The results were as follows:

1. Thyroidectomy reduced the eruption rate 45 per cent during a 10 week period, while the size of the tooth structures remained

20 to 25 per cent below normal. Histologically, reduction of vascularity-stunted growth, differentiation and early atrophy of the odontogenic epithelium were conspicuous thyroprivic symptoms.

2. Administration of growth hormone resulted in a slight increase in eruption rate and in tooth size; a considerable growth of the maxillary bone beyond normal dimensions was observed. Histologically, connective tissues were rejuvenated, but young epithelial cells failed to undergo immediate histodifferentiation.

3. Injection of thyroxin increased the eruption rate more than it increased dental dimensions. There was a decided increase in vascularization of the dental structures and accelerated prolifieration and histodifferentiation of epithelial tissues. Calcification, especially of the enamel matrix, however, was deficient.

4. When both growth hormone and thyroxin were injected simultaneously, the eruption rate and dental dimensions exceeded only slightly those of the thyroxin-treated group; but histologically the structures were improved so that they were scarcely distinguishable from normal structures.

HORMONAL CONTROL OF TOOTH ERUPTION. II. THE EFFECTS OF HYPOPHYSECTOMY ON THE UPPER RAT INCISOR FOLLOWING PROGRESSIVELY LONGER INTERVALS

L. J. Baume, H. Becks, John C. Ray and H. M. Evans, p. 91.

The purpose of the second experiment was to ascertain "correlated metric and histologic information on the effects of hypophysectomy, particularly on two phases of dental development, growth or increase in tooth size and eruption."

In intact rats the increase in the radius of curvature of the upper incisors was rapid until 120 days of age; thereafter there was a slow but steady gain until old age. The weekly eruption rate averaged 2.53 mm. with periodic variation and a decreasing rate with age.

Hypophysectomy caused an immediate drop in the eruption rate to half the normal average; in 10 weeks it was progressively reduced 76 per cent. Stunting of dental growth was noticed two weeks after the operation so that the size of the incisor of 500 day old animals never exceeded that of 40 to 50 day old normal controls.

Apical folding occurred in 60 per cent of the animals 160 days after the operation and showed a uniform histopathologic sequence: dysgenesis of inner enamel epithelium with aplasia of the enamel, irregular calcification of mantle dentin and agenesis of odontoblasts.

Possibly under the influence of masticatory stresses, the small consolidated apical structures became folded and caused displacement of the odontogenic epithelium, probably as a result of the panglandular syndrome of hypophysectomy. In the old hypophysectomized rats, the unfolded incisors were comparatively larger and maintained a minimal eruption rate of 0.55 mm. in contrast to the folded ones, which were smaller and had practically ceased erupting.

This development shows that eruption involves a basic process of growth. The generally more drastic effects of hypophysectomy, in comparison with thyroidectomy, point to the action of a specific pituitary factor in addition to thyrotropin.

HORMONAL CONTROL OF TOOTH ERUPTION. III. THE RESPONSE OF THE INCISORS OF HYPOPHYSECTOMIZED RATS TO GROWTH HORMONE, THYROXIN, OR THE COMBINATION OF BOTH

L. J. Baume, H. Becks and H. M. Evans, p. 104.

Replacement therapy in hypophysectomized rats served to identify the individual hormones controlling their odontogenic defects. The therapy had the same qualitative effect shortly after hypophysectomy as after long postoperative intervals. Growth hormones resulted in an increase in size without hastening the eruption rate.

Histologically, a "rejuvenation" of the connective tissues without activation of amelogenesis was observed. Administration of growth hormone to intact animals had similar effects. Thyroid hormones increased the tooth dimensions and accelerated the eruption rate 36 per cent in the young groups and 46 per cent in the old group.

There was an improved pattern in amelogenesis, and the vascularization of the tissues was restored. The combination of the two hormones produced optimal effects on the eruption rate, and growth was characterized histologically by an amazing restoration of the completely atrophied enamel organ.

These observations led to the conclusion that tooth eruption results from the synergistic action of two hormones: the pituitary growth hormone, which stimulates the basic process of growth, and the thyroid hormone, which controls differentiation or maturation.

THE EFFECT OF ESTROGEN ON THE GINGIVA AND ALVEOLAR BONE OF MOLARS IN RATS AND MICE

A. G. Nutlay, S. N. Bhaskar, J. P. Weinmann and A. M. Budy, p. 115.

Sixteen newborn rats, 22 newborn mice and 32 1-year old mice were used to study the effect of estrogens on the alveolar process, gingival epithelium and epithelial attachment of the molar teeth. Newborn rats and newborn mice received a total of 0.05 to 1.30 mg. of a-estradiol benzoate or diethylstilbestrol over a period of from 5 to 42 days. Old mice were given either a subcutaneous implant of 2.0 mg. of crystalline a-estradiol benzoate or injections of a total of 1.5 to 6.0 mg. of a-estradiol benzoate over a maximum period of 13 weeks.

Roentgenological and histological investigations revealed that the young rats failed to show any response. In young mice which received more than 0.80 mg. of a-estradiol benzoate or diethylstilbestrol the hemopoietic marrow spaces of the alveolar process were narrowed and contained fibrous tissue. In old mice, changes were striking. There was an increased downgrowth of the epithelium of interdental papilla. The epithelial attachment grew along the root surfaces and interradicular regions. Later, due to its separation from the tooth surfaces, interdental and interradicular pockets developed, and the corresponding bony septa showed resorption.

THE LOCALIZATION AND INTERRELATION OF NUCLEIC ACIDS AND ALKALINE PHOSPHATASE IN THE DEVELOPING TEETH

Percy L. Johnson and Gerrit Bevelander, p. 128.

A histochemical study of the developing tooth was undertaken to determine the localization of nucleic acid and alkaline phosphatase, and the following observations were made. Both ribonucleic acid and phosphatases begin to appear in the cytoplasm of the odontoblasts and ameloblasts as these cells differentiate. After calcification begins, ribonucleic acid and phosphatases are abundant in the cytoplasm of the functional odontoblasts and ameloblasts and remain so during the elaboration of the calcifying tissues.

STAINING REACTIONS FOLLOWING DEMINERALIZATION OF HARD TISSUES BY CHELATING AND OTHER DECALCIFYING AGENTS

H. A. Hunter and Gordon Nikiforuk, p. 136.

By a method of decalcifying teeth and bones in alkaline solutions of ethylenediamine tetracetate up to pH 12.0, the effects of concentration, pH and temperature on histological staining reactions were compared. Comparisons also were made with results of six other decalcifying methods and two different tissue fixatives.

AN APPARATUS AND A TECHNIC FOR THE PREPARATION OF GROUND SECTIONS AND THE PERFORMANCE OF SERIAL SURFACE GRINDINGS

Gisle Fosse, p. 139.

An attempt was made to simplify the microscopic study of undecalcified tissues by means of a grinding apparatus designed to combine the advantages of similar machines. An extremely low grinding pressure and a low revolution velocity of the grinding wheel made it possible to grind down sections of teeth to a thickness of 50-80 microns within a couple of minutes.

To accelerate the hardening of the monomer, methyl methacrylate, the polymer powder applied in dental practice to accelerate the polymerization of acrylic dentures, was used. The application of this powder as a catalyst seems to simplify the plastic embedding technic; however, it was found that the rate of the polymerization process in certain ways depends on the substance of the containers and also on the softness and size of the samples.

Microscopic surface investigations by incident light can be performed by serial planoparallel grindings of specimens.

Deaths

Allwood, William A., St. Petersburg, Fla.; School of Dentistry, University of Pennsylvania, 1897; died February 27; aged 77.

Anderson, Herman, Perth Amboy, N. J.; Philadelphia Dental College, 1904; died March 30; aged 79.

Anderson, John R., Minneapolis, Kan.; Kansas Dental College, 1916; died November 8; aged 62.

Appleby, Charles L., St. George, S. C.; Southern Dental College, Atlanta, 1910; died March 13; aged 68.

Aronstein, William, Woodmere, N. Y.; New York College of Dentistry, 1908; died March 12; aged 68.

Bachelder, Frank H., Manchester, N. H.; Boston Dental College, 1896; died March 21; aged 83.

Badgero, Lynn B., Reno, Nev.; died January 8; aged 77.

Basinger, Ira W., Mansfield, Ohio; Department of Dentistry, Starling-Ohio Medical College, 1914; died March 4; aged 67.

Beattie, Thomas P., Tarentum, Pa.; School of Dentistry, University of Pittsburgh, 1916; died March 4; aged 63.

Bennett, James G., Vashon, Wash.; Indiana Dental College, 1919; died April 1; aged 65.

Bereston, Arthur, Baltimore; Baltimore College of Dental Surgery, University of Maryland, 1909; died November 6; aged 74.

Beroset, Fred G., Toledo, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1903; died March 17; aged 76.

Blount, Philip C., Shreveport, La.; Atlanta-Southern Dental College, 1918; died March 24; aged 65.

Bohrer, Ernest E., Kirksville, Mo.; Dental School, Northwestern University, 1902; died January 17; aged 78.

Borg, Alfred L., Chicago; died March 17; aged 64.

Bowser, Randall C., Pittsburgh; School of Dentistry, University of Pittsburgh, 1923; died March 24; aged 60.

Brady, Charles P., Minneapolis; College of Dentistry, University of Minnesota, 1910; died January 12; aged 70.

Bronner, Finn J., New York; School of Dentistry, University of Pennsylvania, 1918; died April 12; aged 66.

Brown, Walter A., Pomona, Calif.; Dental School, Northwestern University, 1898; died March 13; aged 77.

Brun, Bernard Lucien, Baltimore; Baltimore College of Dental Surgery, 1905; died February 19; aged 70.

Burger, Frank, Kenton, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1902; died March 16; aged 75.

Burkhart, William R., Cleveland; College of Dentistry, Western Reserve University, 1900; died March 16; aged 87.

Callow, Joseph E., Milwaukee; Dental School, Northwestern University, 1902; died February 28; aged 81.

Cannon, Charles R., Georgetown, Del.; Baltimore College of Dental Surgery, University of Maryland, 1916; died March 1; aged 60.

Carter, Roy C., Columbus, Ohio; Department of Dentistry, Starling-Ohio Medical College, 1913; died March 3; aged 74.

Chapman, Charles K., Americus, Ga.; Southern Dental College, Atlanta, 1890; died February 22; aged 86.

Close, George H. N., Waterloo, Wis.; Chicago College of Dental Surgery, Loyola University, 1911; died March 19; aged 67.

Cogan, Edward J., Omaha; College of Dentistry, Creighton University, 1920; died in March; aged 53.

Collier, Nathaniel H., Savannah, Ga.; Dental Department, Meharry Medical College, 1924; died February 19; aged 53.

Comee, Cyril C., Green Bay, Wis.; Dental School, Northwestern University, 1922; died March 3; aged 54.

Cook, Samuel S., Newark, N. J.; State Dental College, Dallas, 1916; died February 16; aged 71.

Coulson, Kenneth R., Santa Ana, Calif.; College of Dentistry, University of Southern California, 1925; died March 10; aged 54.

Cox, William A., Omaha; Dental School, Northwestern University, 1903; died in March; aged 76.

Davidson, Albert E., Weirton, W. Va.; School of Dentistry, University of Pittsburgh, 1911; died March 13; aged 75.

Davis, Carrie Canon, Salem, Ore.; died March 17; aged 74.

Decker, Charles M., San Francisco; College of Physicians and Surgeons, San Francisco, 1911; died March 7; aged 65.

Duryee, Edward C., Peekskill, N. Y.; School of Dentistry, University of Pennsylvania, 1901; died February 24; aged 74.

Dykes, Earl T., Los Angeles; College of Physicians and Surgeons, San Francisco, 1917; died March 7; aged 61.

Edmunds, Wesley B., Alhambra, Calif.; School of Dentistry, North Pacific College of Oregon, 1922; died March 13; aged 62.

Elbrick, Otto A., Nashville, Tenn.; School of Dentistry, Vanderbilt University, 1906; died March 1; aged 75.

Epstein, Albert M., Elmira, N. Y.; School of Dentistry, University of Pennsylvania, 1908; died December 29; aged 65.

Evans, George S., St. Louis; School of Dentistry, St. Louis University, 1915; died February 9; aged 68.

Ewing, Walter, Framingham, Mass.; Dental School, Tufts College, 1908; died February 17; aged 68.

Farnum, Chester E., Wilton, N. H.; died February 23; aged 93.

Felburg, Leon, Newark, N. J.; Indiana Dental College, 1921; died May 31.

Fexer, Frederick J., Milwaukee; Dental School, Northwestern University, 1940; died March 13; aged 39.

Firey, Thurman C., Hagerstown, Md.; Baltimore College of Dental Surgery, 1912; died March 9; aged 65.

Fitzpatrick, William J., Prestonburg, Ky.; Louisville College of Dentistry of Centre College, 1903; died February 19; aged 77.

Fox, Walter E., Milwaukee; Ohio College of Dental Surgery, University of Cincinnati, 1899; died December 19; aged 75.

Gaffey, Joseph M., Houston, Texas; Dental School, Tufts College, 1896; died February 27; aged 85.

Gardner, Robert M., Brecksville, Ohio; College of Dental Surgery, University of Michigan, 1917; died January 16; aged 57.

Gillis, James C., Conway Springs, Kan.; Western Dental College, Kansas City, 1900; died in January; aged 82.

Gold, Harry J., Aliquippa, Pa.; School of Dentistry, University of Pittsburgh, 1928; died February 21; aged 51.

Goldstein, Barney, Passaic, N. J.; New York College of Dentistry, 1919; died March 2; aged 56.

Green, Edward Q., Rossford, Ohio; College of Dentistry, Ohio Medical University, 1902; died February 2; aged 77.

Hagerup, Myron F., Waco, Texas; Dental School, Northwestern University, 1904; died December 5; aged 80.

Haight, David C., Utica, N. Y.; New York College of Dentistry, 1909; died January 10; aged 70.

Hale, Edith N., Cincinnati; Ohio College of Dental Surgery, University of Cincinnati, 1908; died November 16; aged 67.

Hall, John F., Flemingsburg, Ky.; School of Dentistry, University of Louisville, 1919; died March 20; aged 64.

Hamilton, William S., Louisville, Ky.; Baltimore College of Dental Surgery, 1894; died February 19; aged 86.

Harding, Milton M., Wilton Junction, Iowa; College of Dentistry, University of Iowa, 1923; died November 18.

Harmon, Godfrey D., Kinards, S. C.; Southern Dental College, Atlanta, 1916; died February 23; aged 70.

Harner, Paul S., Coshocton, Ohio; College of Dentistry, Ohio State University, 1914; died February 22; aged 65.

Harris, Addison A., Brookings, S. D.; College of Dentistry, University of Iowa, 1894; died December 1; aged 82.

Hawes, Hubert C., Waco, Texas; State Dental College, Dallas, 1918; died March 17; aged 58.

Hawley, Horace B., Salamanca, N. Y.; School of Dentistry, University of Buffalo, 1902; died March 17; aged 75.

Heintz, John F., Green Bay, Wis.; Dental School, Northwestern University, 1897; died February 13; aged 88.

Hendley, James R., Dade City, Fla.; Southern Dental College-Atlanta, 1909; died February 17; aged 67.

Heyboer, Gabriel J., Chicago; Dental School, Northwestern University, 1919; died March 23; aged 64.

Hobart, Paul C., Somersworth, N. H.; Dental School, Tufts College, 1912; died February 7; aged 63.

Hogan, John G., Bedford, Ind.; Kansas City Dental College, 1894; died March 12; aged 90.

Hollander, Samuel J., Huntington, N. Y.; New York College of Dentistry, 1915; died in February.

Horn, Daniel L., Wilmington, Calif.; College of Dentistry, University of Southern California, 1919; died April 5; aged 57.

Houck, Arland M., Seattle; School of Dentistry, North Pacific College of Oregon, Portland, 1926; died in April; aged 53.

Howgate, Henry O., Greenwich, Conn.; College of Dental and Oral Surgery, New York, 1918; died April 2; aged 61.

Huber, Edward E., Philadelphia; Pennsylvania College of Dental Surgery, Philadelphia, 1896; died March 21; aged 89.

Johnson, Edward F., Mission, Kan.; Kansas City Dental College, 1917; died January 17; aged 62.

Jordan, Gerald E., Houston, Texas; Texas Dental College, Houston, 1928; died March 12; aged 51.

Kalin, Harry H., Leominster, Mass.; Dental School, Tufts College, 1919; died February 24; aged 58.

Kelley, Orange R., New York; College of Dentistry, University of Iowa, 1899; died March 9; aged 79.

Kelly, Charles, Superior, Wis.; Dental School, Northwestern University, 1924; died February 25; aged 54.

Landess, Joe C., Sarasota, Fla.; School of Dentistry, Vanderbilt University, 1924; died March 25; aged 51.

La Rue, F. Wade, Indianapolis; Indiana Dental College, 1913; died March 19; aged 66.

Leiter, James W., Williamsport, Md.; Dental Department, Baltimore Medical College, 1900; died February 20; aged 81.

Lestina, Joseph M., Chicago; Chicago College of Dental Surgery, Loyola University, 1936; died March 31; aged 42.

Liggett, William B., Rockford, Ill.; College of Dentistry, University of Iowa, 1897; died March 1; aged 77.

Luithlen, Harry V., Seattle; School of Dentistry, North Pacific College of Oregon, Portland, 1903; died January 26; aged 78.

Maloy, Edward S., Bellefonte, Pa.; School of Dentistry, Temple University, 1910; died February 12; aged 69.

Maratta, Walter B., Philadelphia; Pennsylvania College of Dental Surgery, Philadelphia, 1896; died February 27; aged 84.

Marlowe, Joseph A., Detroit; School of Dentistry, Temple University, 1914; died February 27.

Martin, Louis L., Fort Worth; College of Dentistry, Baylor University, 1925; died March 17; aged 53.

McLean, David W., Arcadia, Calif.; New York College of Dentistry, 1905; died March 1; aged 70.

Meyers, Herman J., Philadelphia; died January 30; aged 72.

Michael, Louis, Philadelphia; Pennsylvania College of Dental Surgery, Philadelphia; 1907; died February 24.

Moore, George M., Milwaukee; College of Dental Surgery, University of Michigan, 1894; died February 22; aged 82.

Moore, Winfred S., Palm Beach, Fla.; Ohio College of Dental Surgery, University of Cincinnati, 1919; died January 31; aged 58.

Morey, Frank E., Chicago; Chicago College of Dental Surgery, Loyola University, 1899; died March 14; aged 87.

Morgenroth, Charles R., Milwaukee; Dental Department, Milwaukee Medical College, 1904; died February 16; aged 74.

Needles, Edmund S., New Rochelle, N. Y.; College of Dentistry, New York University, 1906; died March 8; aged 69.

Nemmers, Edward G., Chicago; Chicago College of Dental Surgery, Loyola University, 1913; died March 19; aged 63.

Neuhoff, Florian A., Belleville, Ill.; School of Dentistry, Washington University, St. Louis, 1905; died February 27; aged 69.

Oliver, Alfred J., Boston; Dental School, Tufts College, 1919; died March 24; aged 55.

Owen, John W., Union Grove, Wis.; Dental School, Marquette University, 1928; died February 13; aged 60.

Payne, Algernon, Mantua, Ohio; College of Dentistry, Western Reserve University, 1901; died February 15; aged 81.

Pemsler, Samuel, New York; College of Dental and Oral Surgery, New York, 1917; died March 24; aged 58.

Pennington, Evan B., Nashville, Tenn.; Dental Department, Tennessee Medical College, 1892; died March 11; aged 94.

Perry, Alfred J., St. Louis; School of Dentistry, St. Louis University, 1918; died February 27; aged 58.

Perry, Andrew J., Jr., New York; College of Dentistry, New York University, 1891; died December 13; aged 86.

Peterson, Samuel B., Glendale, Calif.; College of Dentistry, University of Southern California, 1929; died February 28; aged 52.

Phillips, Norman S., Lowell, Mass.; Philadelphia Dental College, 1900; died March 12.

Reese, William W., Sulphur, Okla.; Texas Dental College, Houston, 1911; died October 22; aged 69.

Riedel, Barold R., Los Angeles; College of Dentistry, University of Iowa, 1908; died March 17; aged 68.

Robertson, John F., Largo, Fla.; Dental Department, Meharry Medical College, 1908; died January 8; aged 86.

Robinson, Frank A., Warsaw, New York; School of Dentistry, University of Buffalo, 1907; died February 20; aged 67.

Rogers, Oscar, Bellingham, Wash.; School of Dentistry, North Pacific College of Oregon, Portland, 1918; died March 19; aged 70.

Russell, Earl J., Newark, Ohio; College of Dentistry, Ohio State University, 1910; died February 28; aged 65.

Schaefer, Paul, New Orleans; New Orleans College of Dentistry, 1906; died February 22; aged 67.

Schooler, James L., San Francisco; died February 28; aged 60.

Schupack, Charles B., Philadelphia; Pennsylvania College of Dental Surgery, Philadelphia, 1894; died March 6; aged 79.

Scobey, Harry C., New York; New York College of Dentistry, 1897; died March 18; aged 79.

Shoore, Leo J., Chicago; Dental School, Northwestern University, 1912; died April 16; aged 71.

Slater, James P., Omaha; College of Dentistry, University of Nebraska, 1908; died April 16; aged 74.

Slyh, Chester L., Columbus, Ohio; College of Dentistry, Ohio Medical University, 1904; died April 13; aged 72.

Smathers, John M., Du Bois, Pa.; Baltimore College of Dental Surgery, University of Maryland, 1913; died December 9; aged 70.

Smith, Fred R., Canton, Ohio; School of Dentistry, University of Pittsburgh, 1914; died March 19; aged 62.

Smith, James O., Madison, Wis.; Chicago College of Dental Surgery, Loyola University, 1910; died February 6; aged 69.

Smith, William C., Corona del Mar, Calif.; School of Dentistry, University of Buffalo, 1894; died February 26; aged 85.

Snow, Eldon, Los Angeles; College of Dentistry, University of Southern California, 1926; died April 14; aged 62.

Speers, William J., Lexington, Mass.; Dental School, Harvard University, 1902; died March 12; aged 76.

Stevens, Edward T., Cape Charles, Va.; Baltimore College of Dental Surgery, University of Maryland, 1919; died January 17; aged 58.

Stevenson, Henry F., Tarrytown, New York; Dental School, Harvard University, 1913; died January 28; aged 68.

Stewart, Doris Simpson, Pittsburgh; School of Dentistry, University of Pittsburgh, 1949; died March 1; aged 45.

Stewart, Thomas B., Ambler, Pa.; Pennsylvania College of Dental Surgery, Philadelphia, 1891; died February 4; aged 84.

Sugg, Benjamin R., Sabula, Iowa; Chicago College of Dental Surgery, Loyola University, 1907; died February 11; aged 69.

Syverson, Howard L., Tomah, Wis.; Dental School, Northwestern University, 1924; died March 23; aged 52.

Talbut, Blaine I., Whitehouse, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1912; died April 8; aged 65.

Taylor, Charles S., Princeton, N. J.; School of Dentistry, University of Pennsylvania, 1904; died March 22; aged 81.

Taylor, William M., Linden, Mich.; College of Dental Surgery, University of Michigan, 1922; died February 23; aged 59.

Thomas, Halbert C., Suttons Bay, Mich.; College of Dental Surgery, University of Michigan, 1912; died February 12; aged 64.

Thompson, Dessie D., Marion, Ohio; College of Dentistry, Ohio Medical University, 1904; died January 31; aged 81.

Thomson, Volney E., Plain City, Ohio; College of Dentistry, Ohio State University, 1931; died January 25; aged 50.

Todd, J. Harold, Plymouth, Mich.; College of Dental Surgery, University of Michigan, 1923; died February 6; aged 56.

Townsend, Gerald W., Chicago; Dental School, Northwestern University, 1923; died April 23; aged 55.

Turner, Baxter C., Kansas City, Mo.; Western Dental College, Kansas City, 1910; died February 9; aged 67.

Tyner, Robert E., WaKeeney, Kan.; Kansas City-Western Dental College, 1928; died February 22; aged 49.

Van Tress, Herman B., Alhambra, Calif.; Ohio College of Dental Surgery, University of Cincinnati, 1891; died March 27; aged 88.

Volz, Lawrence H., Wenona, Ill.; Chicago College of Dental Surgery, Loyola University, 1925; died January 4; aged 60.

Walls, William H., Philippi, W. Va.; School of Dentistry, University of Pittsburgh, 1928; died November 30; aged 48.

Walsh, Carlin A., Cambridge, Mass.; died February 10; aged 68.

Waterman, Richard C., Denton, Texas; Indiana Dental College, 1921; died November 10; aged 58.

Watkins, William F., Los Angeles; Dental Department, Meharry Medical College, 1909; died March 28; aged 72.

Watson, Harold, Denver; School of Dentistry, University of Denver, 1923; died March 21; aged 57.

Wendt, Wesley H., Madison, Wis.; Dental School, Marquette University, 1927; died March 16; aged 50.

Wry, Charles B., Fall River, Mass.; Dental School, Tufts College, 1909; died January 11; aged 69.

Yates, Frank, Huntington, W. Va.; Baltimore College of Dental Surgery, University of Maryland, 1923; died January 23; aged 58.

York, Berton E., Walla Walla, Wash.; School of Dentistry, North Pacific College of Oregon, Portland, 1904; died December 10; aged 75.

Zimet, Samuel, Kingston, New York; School of Dentistry, University of Pittsburgh, 1942; died February 6; aged 37.

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Announcements

MEETINGS OF THE AMERICAN DENTAL ASSOCIATION

Ninety-Fifth Annual Session	Nov. 8-11, 1954	Miami, Fla.
Ninety-Sixth Annual Session	Oct. 17-20, 1955	San Francisco
Ninety-Seventh Annual Session	Oct. 1-4, 1956	Atlantic City, N. J.

MEETINGS OF CONSTITUENT SOCIETIES

State	Date	Place	Secretary	Address
Alabama	Apr. 4, 5, 1955	**Birmingham**	F. A. Finney, Jr.	1045 Forrest Ave., Gadsden
Alaska	Aug. 2-5	Anchorage	C. J. Pearson	500 K St., Anchorage
Arizona			R. W. Christensen	17 E. Weldon Ave., Phoenix
Arkansas			D. M. Hamm	Box 89, Clarksville
California	Apr. 16, 1955	San Francisco	L. R. Ludwigsen	450 Sutter St., San Francisco
S. California	May 9-11, 1955	Los Angeles	J. P. Bowers	124 W. Lime Ave., Monrovia
Colorado	Oct. 3-6	Colorado Springs	W. R. Humphrey	724 Republic Bldg., Denver
Connecticut			E. S. Arnold	37 Linnard Rd., W. Hartford
Delaware	Dec. 8	Wilmington	R. J. Zurkow	152 S. State St., Dover
District of Columbia			Z. B. Lloyd	3007 R St., N.W., Washington
Florida	Apr. 24-27, 1955	Jacksonville	J. E. Edwards	152 Alhambra Circle, Coral Gables
Georgia	Oct. 10-13	Atlanta	J. W. Yarbrough	Bibb Bldg., Macon
Hawaii			J. H. Dawe	810 N. Vineyard St., Honolulu
Idaho		Coeur d'Alene	F. O'Halloran	Box 703, Coeur d'Alene
Illinois			P. W. Clopper	623 Jefferson Bldg., Peoria
Indiana	May 16-18, 1955	Indianapolis	D. C. Barnhill	400 Bankers Trust Bldg., Indianapolis
Iowa	May 1-4, 1955	Des Moines	H. I. Wilson	639 Insurance Exchange Bldg., Des Moines
Kansas	May 15-18, 1955	Kansas City, Mo.	F. A. Richmond	861 Brotherhood Bldg., Kansas City
Kentucky	Apr. 18-21, 1955	Louisville	A. B. Coxwell, Jr.	1976 Douglass Blvd., Louisville
Louisiana	Apr. 13-16, 1955	New Orleans	J. S. Bernhard	2815 Line Ave., Shreveport
Maine			S. M. Gower	Box 27, Skowhegan
Maryland			E. L. Pessagno, Jr.	415 Medical Arts Bldg., Baltimore
Massachusetts			H. E. Tinsley	12 Bay State Road, Boston
Michigan	Apr. 18-20, 1955	Detroit	F. Wertheimer	Michigan Dept. of Health, Lansing
Minnesota	Mar. 28-30, 1955	Minneapolis	C. V. E. Cassel	242 Lowry Medical Arts Bldg., St. Paul
Mississippi			B. A. Cohen	306 Plaza Bldg., Jackson
Missouri			E. D. Suggett	201 Merchants Bank Bldg., Jefferson City
Montana	May 5-7, 1955	Bozeman	E. G. Vedova	Roundup
Nebraska	Apr. 25-28, 1955	Lincoln	F. A. Pierson	1112 Federal Securities Bldg., Lincoln
Nevada			O. M. Seifert	506 Humboldt St., Reno
New Hampshire			F. E. Williams	814 Elm St., Manchester
New Jersey			J. G. Carr	407 Cooper St., Camden
New Mexico			J. S. Ellar	Medical Arts Square, Albuquerque
New York	May 16-18, 1955	New York	C. A. Wilkie	1 Hanson Place, Brooklyn
North Carolina			R. D. Coffey	Kibler Bldg., Morganton
North Dakota			V. B. Keltgen	517 de Lendrecie Bldg., Fargo
Ohio	Oct. 17-20	Cincinnati	E. G. Jones	185 E. State St., Columbus
Oklahoma	Apr. 20, 1955	Tulsa	S. A. Russman	809 Medical Arts Bldg., Oklahoma City
Oregon	Mar. 7-9, 1955	Portland	T. D. Holder	308 Selling Bldg., Portland
Panama Canal Zone			A. L. Teitel	Box D, U.S. Naval Station, Rodman
Pennsylvania	Oct. 4-6	Pittsburgh	M. D. Zimmerman	717 State St., Harrisburg
Puerto Rico	Jan. 26-29, 1955	San Juan	L. de Jesus	Box 624, San Juan
Rhode Island	Jan. 1955	Providence	B. C. Friedman	2 Avrault St., Newport
South Carolina	May 22-24, 1955	Charleston	J. R. Owings	7 Medical Court, Greenville

State	Date	Place	Secretary	Address
South Dakota			L. N. Thelen	310A W. 18th St., Sioux Fall
Tennessee	May 8-12, 1955	Nashville	A. M. Ballentine	Pulaski
Texas	May 1-5, 1955	San Antonio	W. Ogle	3607 Gaston Ave., Dallas
Utah	Apr. 1955		R. C. Dalgleish	124 State Capitol Bldg., Salt Lake City
Vermont		Woodstock	W. J. Reardon	18 Madison St., Rutland
Virginia	Apr. 29-May 6, 1955	Havana, Cuba	W. T. McAfee	705 Colonial National Bank Bldg., Roanoke
Washington	Mar. 24-26, 1955	Seattle	W. B. Martin	Medical-Dental Bldg., Seattle
West Virginia	July 25-28	White Sulphur Springs	G. N. Casto, Jr.	710½ Lee St., Charleston
Wisconsin			A. E. Kopp	Wells Bldg., Milwaukee
Wyoming			T. J. Drew	State Office Bldg., Cheyenne

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

State	Date	Place	Secretary	Address
Alabama			W. L. McCarty	200 Professional Center, Montgomery
Alaska	July 19-22*†	Fairbanks	R. H. Williams	Box 2122, Juneau
Arizona			R. K. Trueblood	107 East A Ave., Glendale
Arkansas			H. O. Weatherly	205 Halter Bldg., Conway
California	July 26	San Francisco	K. I. Nesbitt	507 Polk St., San Francisco
Colorado			J. M. Peabody	724 Republic Bldg., Denver
Connecticut			C. G. Brooks	302 State St., New London
Delaware			P. K. Musselman	143 W. Main St., Newark
District of Columbia			W. T. Birthright	Suite 718, 1835 Eye St., N.W., Washington
Florida	July 12-22*†	Jacksonville	A. W. Kellner	P. O. Box 155, Hollywood
Georgia			S. H. Yarbrough	12 Medical Arts Bldg., Columbus
Hawaii	Sept. 1-6‡		H. L. Houvener	427 Dillingham Bldg., Honolulu
Idaho			R. E. Blickenstaff	1023 Fourth St., S., Nampa
Illinois			W. A. McKee	503 Wood Bldg., Benton
Indiana			C. A. Frech	504 Broadway, Gary
Iowa	May 23-27, 1955‡		D. J. FitzGerald	615 Brick & Tile Bldg., Mason City
Kansas			G. L. Teall	Box 71, Hiawatha
Kentucky			R. M. Justice	1330 Central Ave., Ashland
Louisiana			R. C. Steib	833 Maison Blanche Bldg., New Orleans
Maine			R. A. Derbyshire	Box 387, Skowhegan
Maryland			H. Levin	3429 Park Heights Ave., Baltimore
Massachusetts			G. J. Fink	Rm. 33, State House, Boston
Michigan			J. L. Champagne	3714 W. McNichols Road, Detroit
Minnesota			M. G. Walls	1470 Lowry Medical Arts Bldg., St. Paul
Mississippi			J. C. Boswell	508 Lamar Life Bldg., Jackson
Missouri			R. R. Rhoades	414 Central Trust Bldg., Jefferson City
Montana	July 12-16	Helena	V. J. Quinn	301 Phoenix Bldg., Butte
Nebraska			H. E. Weber	1210 Federal Securities Bldg., Lincoln
Nevada	Dec. 6	Las Vegas	R. Whitehead	Suite 6, Masonic Temple, Reno
New Hampshire			S. G. Markos	8 Renaud Ave., Dover
New Jersey			W. A. Wilson	150 E. State St., Trenton
New Mexico			J. J. Clarke, Sr.	Artesia
New York			D. W. Beier	23 S. Pearl St., Albany
North Carolina			F. O. Alford	1109 Liberty Life Bldg., Charlotte
North Dakota	July 12-16	Fargo	A. L. Pushor	Lisbon
Ohio			H. B. Smith	322 E. State St., Columbus
Oklahoma			R. P. Keidel	403 Surety Bldg., Muskogee
Oregon			F. L. Utter	506 Pioneer Trust Bldg., Salem
Pennsylvania			A. M. Stinson	Dept. of Public Instruction, Box 911, Harrisburg
Puerto Rico			J. Mercado C.	Box 3717, Santurce
Rhode Island			F. M. Hackett	267 Academy Ave., Providence
South Carolina			T. C. Sparks	1315 Pickens St., Columbia
South Dakota			H. T. Aker	Canton
Tennessee			C. R. Aita	619 Bennie Dillon Bldg., Nashville

State	Date	Place	Secretary	Address
Texas			R. T. Weber	312 Capital National Bank Bldg., Austin
Utah			N. E. Munk	201 Cache Valley Bank Bldg., Logan
Vermont			P. M. Fitch	Newport
Virginia			J. M. Hughes	715 Medical Arts Bldg., Richmond
Washington			M. L. Mower	National Bank of Commerce Bldg., Olympia
West Virginia			C. A. Laughlin	613 Prunty Bldg., Clarksburg
Wisconsin			S. F. Donovan	Tomah
Wyoming			W. A. Hocker	212 O & S Bldg., Casper

*Dental examination. †Dental hygiene examination. ‡Write to secretary of dental examining board for information on locations of examinations. §Approximate dates—verify with state dental examining board.

MEETINGS OF OTHER ORGANIZATIONS

Name	Date	Place	Secy. or Chm.	Address
American Academy of Dental Medicine	Dec. 5	New York	W. M. Greenhut Secy.	124 E. 84th St., New York
American Academy of Gold Foil Operators	Nov. 6	Miami, Fla.	G. D. Stibbs Secy.	School of Dentistry, University of Washington, Seattle
American Academy of the History of Dentistry	Nov. 4	Miami, Fla.	H. L. Faggart Secy.	2120 Pine St., Philadelphia
American Academy of Implant Dentures	Nov. 6, 7	Miami, Fla.	R. J. Kresse Secy.	312 17th St., Denver
American Academy of Oral Roentgenology	Nov. 6	Miami, Fla.	E. A. Bourassa Secy.	1033 Medical and Dental Bldg., Seattle
American Academy of Periodontology	Nov. 4-6	Miami Beach, Fla.	C. E. Chamberlain Secy.	115 North St., Peoria, Ill.
American Association of Dental Examiners	Nov. 5, 6	Miami, Fla.	C. A. Bumstead Secy.	924 Stuart Bldg., Lincoln, Neb.
American Board of Dental Public Health	Nov. 4, 5	Miami, Fla.	P. E. Blackerby, Jr. Secy.	250 Champion St., Battle Creek, Mich.
American College of Dentists	Nov. 7	Miami, Fla.	O. W. Brandhorst Secy.	4221 Lindell Blvd., St. Louis
American Dental Assistants Association	Nov. 8-11	Miami, Fla.	M. L. Martin Exec. Secy.	410 First National Bank Bldg., LaPorte, Ind.
American Dental Society of Anesthesiology	Nov. 6, 7	Miami, Fla.	J. H. Mervis Secy.	510 Walnut St., Clairton, Pa.
American Dental Society of Europe	July 6-9	Paris, France	J. P. Molony Hon. Secy.	110 Harley St., London W. 1, England
American Denture Society	Nov. 5, 6	Miami Beach, Fla.	A. L. Roberts Secy.	Aurora National Bank Bldg., Aurora, Ill.
American Institute of Dental Medicine	Oct. 31-Nov. 4	Palm Springs, Calif.	M. G. Lewis Exec. Secy.	2240 Channing Way, Berkeley, Calif.
American Public Health Association	Oct. 11-15	Buffalo	R. M. Atwater Exec. Secy.	1790 Broadway, New York
American Society of Oral Surgeons	Nov. 3-6	Hollywood, Fla.	R. F. Whalen Exec. Secy.	1112 E. Clay St., Richmond, Va.
Ark-La-Tex Dental Congress	Aug. 16	Shreveport, La.	M. Monsour Chm.	Medical Arts Bldg., Shreveport, La.
Austrian Dental Convention	Sept. 23-25	Innsbruck, Austria	F. Fischer Secy.	Tirolean Dental Society, Anichstrasse 35/1, Innsbruck, Austria
Chicago Dental Society	Feb. 6-9, 1955	Chicago	K. S. Richardson Exec. Secy.	30 N. Michigan Ave., Chicago
Council on Dental Education, Dental Aptitude Tests	Oct. 1, 2		S. Peterson Secy.	222 E. Superior St., Chicago
Eastern Ontario Dental Association	Sept. 19-21	Kingston, Ontario, Can.	M. M. Derrick Secy.	183 Metcalfe St., Ottawa, Ontario, Can.
Greater New York Dental Meeting	Dec. 6-10	New York	M. Purdy Exec. Secy.	Rm. 106A, Hotel Statler, New York
Italian Congress of Dentistry and Stomatology Twenty-ninth Congress	Sept. 13-18	Venice, Italy	U. Saraval Dir.	Campo Manin 4017, Venice, Italy

Name	Date	Place	Secy. or Chm.	Address
Journees Dentaires de Paris	Nov. 24-28	Paris, France	J. Ouvrard Secy. Gen.	33, Av. Pierre, 1er, De-Serbie, Paris
Mid-Continent Dental Congress	Nov. 28-Dec. 1	St. Louis	J. E. Brophy Exec. Secy.	8013 Maryland Ave., St. Louis
National Board of Dental Examiners	Dec. 6, 7		G. J. Casey Secy.	222 E. Superior St., Chicago
New England Dental Society	Oct. 20, 21	Boston	F. L. Finley, Jr. Secy.	43 Farmington Ave., Hartford, Conn.
Northeastern Society of Orthodontists	Oct. 25, 26	Buffalo	W. J. Prezzano Secy.	Medical Centre, White Plains, N. Y.
Seventh New Orleans Dental Conference	Oct. 24-27	New Orleans	V. B. Marquer Secy.	2213 S. Carrollton Ave., New Orleans
Southern Society of Orthodontists	Oct. 31-Nov. 3	Washington, D. C.	M. D. Edwards Secy.	132 Adams Ave., Montgomery, Ala.
Southwestern Society of Orthodontists	Oct. 10-13	Oklahoma City	F. A. Boyd Secy.	1502 N. Third St., Abilene, Texas

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CALIFORNIA—For sale. Fine practice in newly constructed building near Riverside. Two operating rooms, laboratory, x-ray room dark room, business office, reception room. All completely furnished and equipped. $7,500. Terms. Address A.D.A. Box No. 658.

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CALIFORNIA—For sale. Extremely busy general practice located south of San Francisco in suburb of a rapidly growing city of over 100,000. Attractive dental offices located in modern medical building with several physicians and no other dentists. Gross over $30,000, asking $12,000. Owner going into specialty. Address A.D.A. Box No. 585.

•

CONNECTICUT—For sale, dental office and active practice. Modern, fully equipped, two air-conditioned operating rooms, laboratory, x-ray. Hygienist. Annual gross $22,-000 and growing. Low overhead. Most prominent business corner. Address A.D.A. Box No. 653.

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DISTRICT OF COLUMBIA—For sale, office yielding $12,000 per year net. Retiring. Practice is transferrable. Younger man could easily increase this amount. Located in business section of city. This is really the "Chance of a lifetime." Terms may be arranged. Address A.D.A. Box No. 685.

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FLORIDA—Office for rent or sale. Would also consider associate in active practice, Miami Beach. Excellent location. Established more than 10 years. Address A.D.A. Box No. 660.

•

ILLINOIS—For rent, or long term lease. New bungalow two-chair office located downtown. City of 25,000 in north central Illinois. Established practice of 19 years. Good industrial and farming area with hunting and fishing. Called into service. References requested. Address A.D.A. Box No. 629.

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INDIANA—For rent, established two-chair office. Equipment for sale. Terms if desired. Office rent $102 per month. Excellent for newly licensed dentist with little cash. Mrs. Ernest Telfer, 519 S. 9th St., Vincennes, Ind.

•

IOWA—Reasonable rent. Fully equipped, modern, one-chair office downtown. Excellent opportunity for man desiring well-established general practice of 26 years. Available because of recent death. Address Mrs. Harold Higgins, 841 Frances Bldg., Sioux City, Iowa.

•

IOWA—For sale. Dental office and equipment. Small community, 1,300 population, large drawing territory. Only dentist in town. Must move to another state to be nearer parents. Two-chair office, reception room, laboratory, business office, private office, two lavatories. Lease 4 years to go. Good spot for young man just starting. Address A.D.A. Box No. 663.

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KANSAS—For rent. New lustron building. Two-chair office of recently deceased dentist. Practically new Ritter equipment, x-ray and office furniture for sale. Rent $100 per month. Well-established business in prosperous wheat and oil community. Address Lula R. Tyner, Wakeeney, Kansas.

MASSACHUSETTS — Completely equipped, one-chair office. Practice established 34 years. Lovely central Massachusetts community, population 25,000. Office in excellent downtown location. Rent very reasonable. Address A.D.A. Box No. 690.

•

MICHIGAN—For sale. Two-chair, well-established practice in Ypsilanti, (six miles from University of Michigan). Leaving to specialize. Contact A. J. Rondon, 23 N. Washington St., Ypsilanti, Mich.

•

NEBRASKA—For sale dental office. Priced to sell. Address A.D.A. Box No. 682.

•

NEW JERSEY—For rent. Excellent opportunity for good dentist. Office established 7 years, very large practice. Rent $75 monthly, electricity and heat included. Dentist presently in office moving within 60 days because he needs more space. Dr. Yubas, optometrist, 431 Kaighn Ave., Camden, N. J. Phone Woodlawn 4-4956.

•

NEW YORK—For sale. Active dental practice, established, unusual opportunity. Home and office combination, completely modern equipment, Ritter. Unopposed location, in western N. Y. Attractive home. Favorable mortgage. Leaving state. Address A.D.A. Box No. 632.

•

NEW YORK—For sale. Six rooms, two-car garage, finished basement and large plot for future expansion on main road. Central Suffolk county, defense plants nearby, over 10,000 population, rapidly expanding, developments in. Only one dentist. Priced at $16,-000 for quick sale. Terms. P.O. Box 517, Lake Ronkonkoma, N. Y.

•

NEW YORK—For sale. Desirable location for professional office and residence in fast growing Nassau county, Long Island, N. Y. Fine old house on excellent corner, priced at $21,000. John C. Fry, 135 Long Beach Rd., Oceanside, N. Y.

•

NEW YORK—Complete equipment of dentist recently deceased, to be sold as a unit, or with residence in which office was located, Bay Ridge, Brooklyn, N. Y. Mrs. L. E. Brockett, 230 W. 76th St., Apt. 87, New York 23, N. Y.

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OHIO—For sale, general practice, modern, two-chair, air-conditioned office, located in a fine town of 6,000 in northern Ohio. Leaving to specialize. Address A.D.A. Box No. 681.

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PENNSYLVANIA—For sale. Dental offices, fully equipped, combined with modern home, central. Near Harrisburg. Dentist deceased. Replacement urgently needed. Terms. Or rental of offices (4 rooms) reasonable, ready to begin practice. Mrs. Fay Mullen, 200 Main St., Mechanicsburg, Pa. Telephone 5113.

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PENNSYLVANIA — For sale, because of death, practice and well-equipped dental office with six room house attached, located in Williamsport, Pa., a city of over 50,000. Mrs. E. F. Marnon, 718 Rural Ave., Williamsport, Pa.

•

TEXAS—For sale, completely equipped oral surgeon's office. Equipment in excellent condition. Priced to sell. Write whether interested in equipment only or practice and equipment. Give details of requirements. Address A.D.A. Box No. 636.

WASHINGTON—Successful, long-established ethical practice, Puget Sound country. Ritter equipped, two-chair office. Owner desires to retire. Will stay reasonable time to introduce successor. Address A.D.A. Box No. 667.

OPPORTUNITIES AVAILABLE

CALIFORNIA—Wanted, young dentist interested in pedodontics to associate with dentist who has large overflow practice. No equipment necessary. Dr. B. C. Davis, 2042 Bel-Air, San Jose, Calif.

•

CALIFORNIA—Opening in medical professional building for dentist. Laboratory and x-ray facilities. Town of 15,000 population, close to San Bernardino, 60 miles from Los Angeles. Ideal opportunity for dental practice. W. C. Engel, M.D., 128 East G St., Colton, Calif.

•

CALIFORNIA—Wanted dentist. California licensed. Progressive community 15,000, practice assured. Architect-designed dental suite available. Address A.D.A. Box No. 638.

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CONNECTICUT—Senior institution dentist wanted for a well-equipped dental office in a large, modern state hospital. Permanent position under civil service. Paid vacations. Sick leave and many other benefits. Low cost maintenance available on grounds if desired. Salary $5,160 to $6,600 open. Superintendent, Box 351, Middletown, Conn.

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FLORIDA—Dentist wanted, Miami Beach. Thoroughly experienced, full or part time. Wonderful opportunity. State age, experience, draft status and salary expected. Address A.D.A. Box No. 687.

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IOWA—Dentist wanted to set up practice in new medical and dental building. Excellent opportunity. Trade area about 3,500 people. New Lutheran church, new high school, 400 pupils enrolled. Ringsted Business Club, Ringsted, Iowa.

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MARYLAND—Wanted orthodontist with Maryland license, for Baltimore suburb. Over 75,000 population with no competition. Can assure cooperation of local general practitioners. Unusual opportunity, either part or full time. Address A.D.A. Box No. 668.

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MONTANA—Dentist wanted in growing town of 3,000 population including trade area, in newly discovered oil field and prosperous farming territory. Poplar Chamber of Commerce, Poplar, Mont.

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NORTH DAKOTA—Dentist wanted in prosperous community. Red River valley, new clinic building, office fully equipped. Present dentist called into service. Finances available. Wonderful opportunity. H. M. Nash, Sec'y., Community Medical Center, Hatton, N. Dak.

OPPORTUNITIES WANTED

CALIFORNIA—Young dentist interested in locating in the peninsular area around San Jose. Will buy, become an associate or work on salary or commission basis in general practice. Age 31, married, 3 children. California license, veteran, excellent references. Have had own practice 9 years, grossed over $45,000 last year. Available immediately. Address A.D.A. Box No. 679.

•

CALIFORNIA—Oral surgeon, competent in general anesthesia, desires part time association with individual or group, preferably in San Francisco, Marin or East Bay counties. Address A.D.A. Box No. 688.

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ILLINOIS—Dentist, Illinois license, interested in association or purchase of practice in Chicago or northern Illinois area. Will complete Army tour about July 1954. Address A.D.A. Box No. 686.

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NEW YORK—Dentist, age 32, nine years' private practice, now completing overseas Army service, wishes to associate and purchase home-office combination, active practice, Long Island, Westchester or Brooklyn. Address A.D.A. Box No. 680.

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PENNSYLVANIA—Oral surgeon with 3 years' postgraduate training in oral surgery, M.S. degree, 3 years' training in general anesthesia, desires to associate with oral surgeon, or purchase practice anywhere. Address A.D.A. Box No. 684.

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WASHINGTON — Dentist, Washington license, experienced in private practice, desires location or established practice in Puget Sound area, preferably within short distance of Seattle or Tacoma. Address A.D.A. Box No. 675.

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Old or used dental books or journals. Leo L. Bruder, 1 DeKalb Ave., Dept. 21, Brooklyn, N. Y. Dealer in out-of-print dental literature.

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BRIEF OUTLINE OF COVERAGE

Accident Benefits —Full monthly benefit for total disability, from FIRST DAY, limit 60 months. **One-half monthly benefit for partial disability, limit 6 months.** Limit of time for total and partial combined 60 months.

Sickness Benefits —Full monthly benefit for total disability commencing with Eighth day of disability, limit 24 months, **house confinement not required.**

Individual Termination —The insurance of each insured member will continue in force concurrently with the group policy and will only be terminated by reason of any of the following conditions:

a. If the group policy is terminated.

b. If the insured member fails to pay the required premium.

c. If the insured member ceases to be a member of the American Dental Association.

d. If the insured member retires or ceases to be actively engaged in the dental profession.

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PREMIUM RATES

(Applicable to ages at entry and attained at annual renewal date of the group policy, which is November 1 of each calendar year. Renewal rates do not change on attainment of age 65.)

				SEMI-ANNUAL RATES		
Monthly Benefits	Accidental Death Benefit	Dismemberment Benefits	Ages Up To 50	Ages 50 to 60	Ages 60 to 65	Ages** 65 to 70
$100.00	$3,000.00	$ 5,000.00	$16.05	$18.30	$22.80	$26.30
$200.00	3,000.00	10,000.00	30.15	34.65	43.65	50.65
$300.00	3,000.00	15,000.00	44.25	51.00	64.50	75.00
$400.00	3,000.00	20,000.00	58.35	67.35	85.35	99.35

Premiums will be billed half-yearly.

**Although the age limit for acceptance of risks is the 70th birthday, once issued, there is no termination age limit for renewal.

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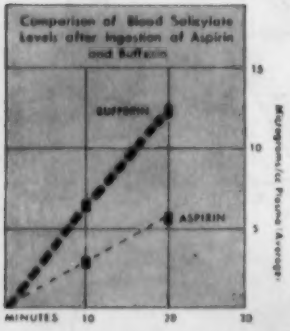

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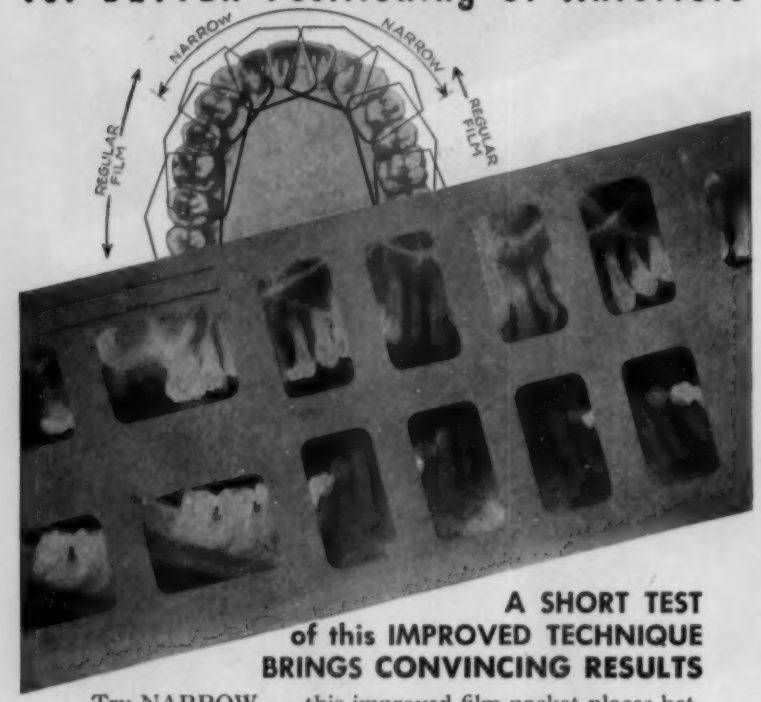

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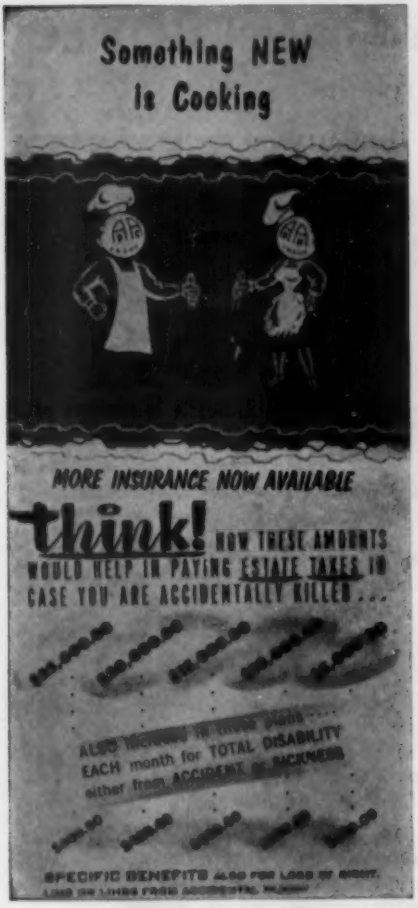
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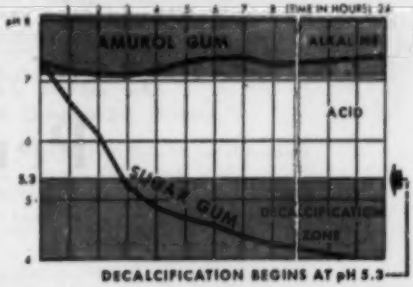

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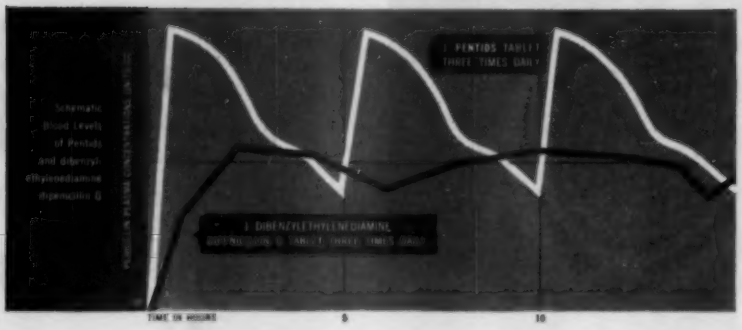

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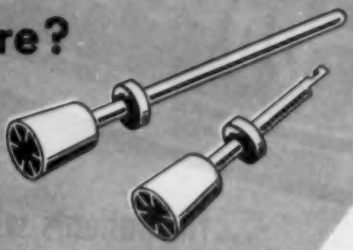

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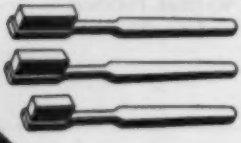

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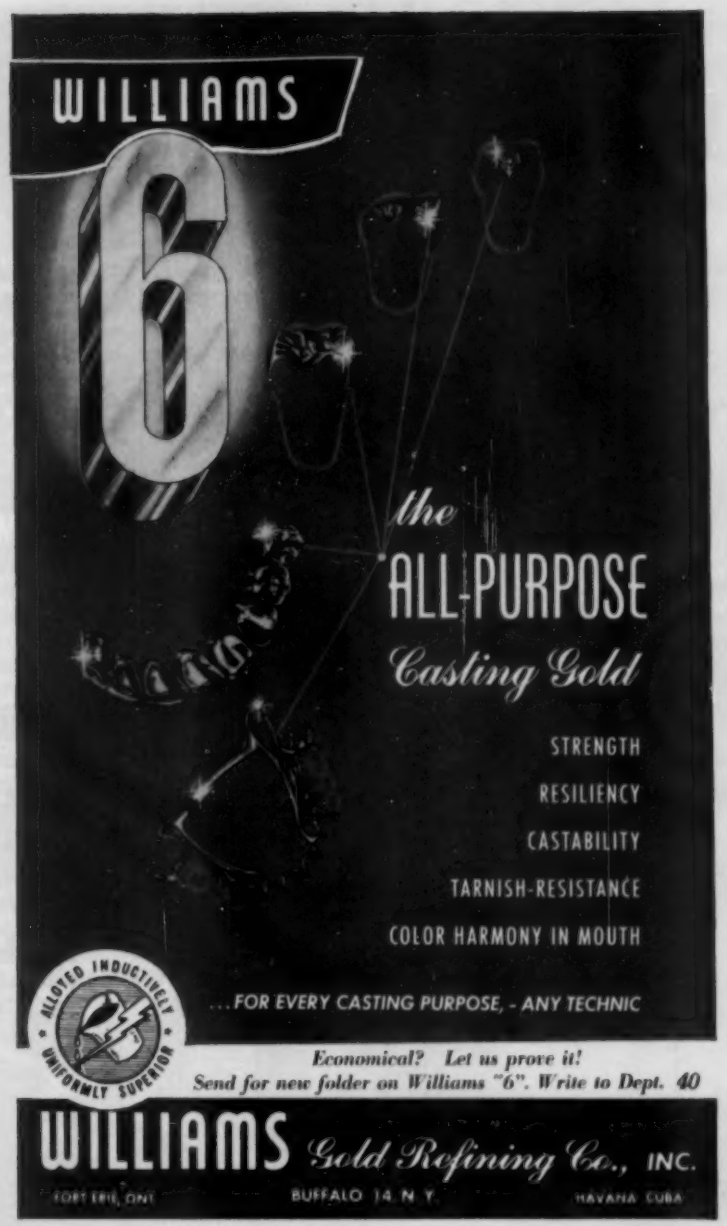
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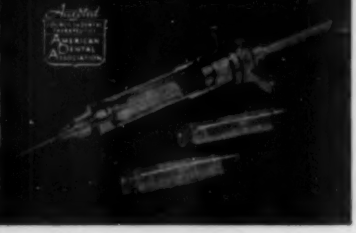

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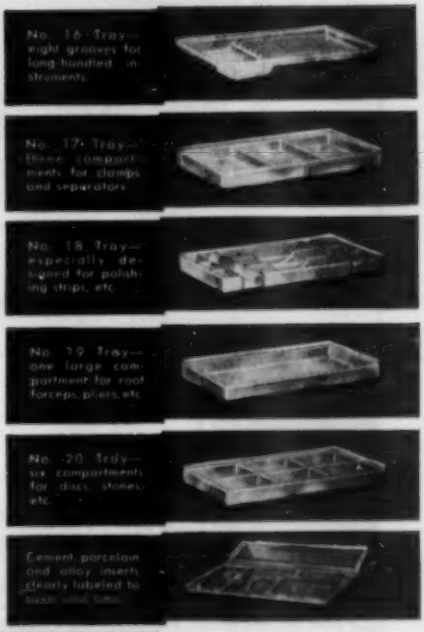
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INSTRUCTIONS: Reservations for hotel accommodations may be secured for either Miami or Miami Beach by completing this application and mailing it to: A.D.A. Housing Bureau, 320 N.E. Fifth Street, Miami, Florida.

Be sure to indicate your arrival time in Miami. Reservations will be held only until 6 p.m. of the day you indicate for your arrival in Miami. Failure to notify the hotel of any last minute change in your arrival time may result in cancellation of the reservation.

Names of all persons who intend to occupy the accommodations must be listed on the application.

List four choices of hotels. Confirmation will be sent to the applicant indicating which hotel has accepted the reservation.

Write the A.D.A. Housing Bureau in Miami if you wish to cancel the reservation.

A.D.A. Housing Bureau • 320 N.E. Fifth Street, Miami, Florida

(Please print or type) A.D.A.

Applicant:

Name_____

_____
(Street address) (City) (Zone) (State)

Arrival in Miami_____ a.m. / p.m. Leaving_____

Accommodations:

Hotel_____ (First choice) Hotel_____ (Third choice)

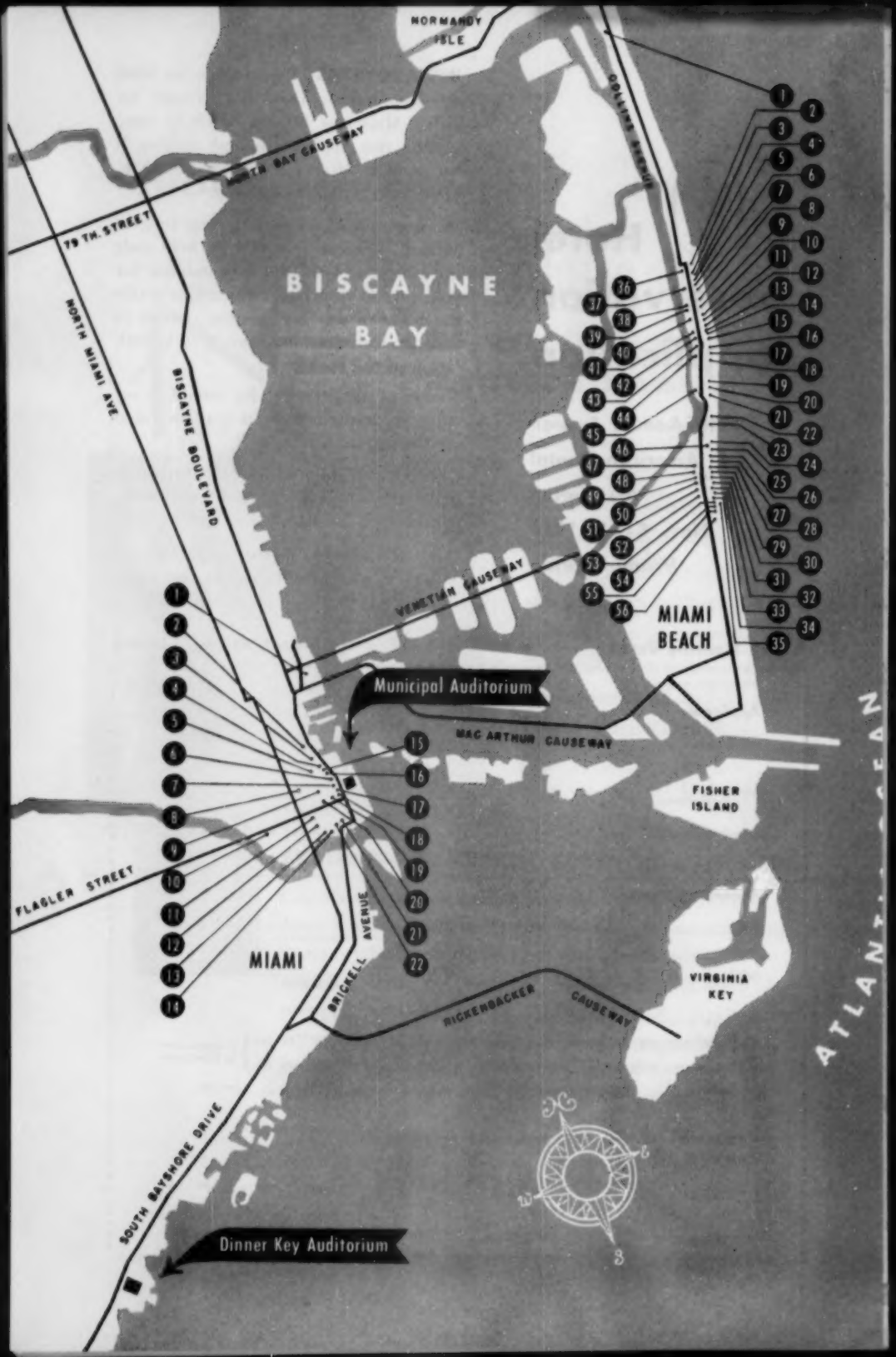
Hotel_____ (Second choice) Hotel_____ (Fourth choice)

☐ Single occupancy, rate to range from $____ to $____ per day.
☐ Double occupancy, double bed, rate to range from $____ to $____ per day. } 2 names must be listed below
☐ Double occupancy, twin beds, rate to range from $____ to $____ per day. }
☐ Suite of____ rooms, including parlor, rate to range from $____ to $____ per day.

Occupants: (use an extra page for listing additional names if necessary)
Room will be occupied by:

_____
(Name) (Address) (City) (State)

_____
(Name) (Address) (City) (State)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COLLINS AVENUE
NORTH BAY CAUSEWAY
79 TH. STREET
NORTH MIAMI AVE.
BISCAYNE BOULEVARD
BISCAYNE BAY
VENETIAN CAUSEWAY
MIAMI BEACH
Municipal Auditorium
MAC ARTHUR CAUSEWAY
FISHER ISLAND
FLAGLER STREET
MIAMI
BRICKELL AVENUE
RICKENBACKER CAUSEWAY
VIRGINIA KEY
ATLANTIC OCEAN
SOUTH BAYSHORE DRIVE
Dinner Key Auditorium
N
W
E
S

Hotels in **MIAMI**

Key no.	Hotel	Single	Double
2	Alcazar	$5.00	$6.00-$ 7.00
11	Alhambra		7.00
9	Belfort	5.00	6.00- 7.00
16	Berni		5.00- 7.00
5	Biscayne Terrace	8.00	10.00- 14.00
7	Columbus	6.00- 7.00	8.00- 12.00
8	Cortez	4.00	5.00- 7.00
12	Dallas Park		10.00
10	El Comodoro	5.00- 6.00	8.00- 12.00
15	Everglades	5.00- 8.00	8.00- 12.00
17	Leamington		6.00- 7.00
3	Liberty		6.00
18	McAllister	5.00- 7.00	8.00- 12.00
6	Miami Colonial	5.00- 6.00	8.00- 10.00
19	Paramount		6.00- 8.00
21	Patricia	5.00	7.00
4	Plaza	5.00	7.00- 8.00
20	Ponce de Leon	8.00	10.00- 12.00
14	Robert Clay	5.00- 6.00	5.00- 7.00
22	Towers	4.00	6.00
13	Tuttle		6.00
1	Venetian	5.00- 6.00	6.00- 8.00

Hotels in **MIAMI BEACH**

Key no.	Hotel	Single	Double
7	Atlantic Towers	$ 7.00	$ 9.00-$
21	Atlantis	5.00	6.00
22	Belmar	8.00	10.00- 12.00
20	Billows		6.00
9	Cadillac		6.00- 8.00
43	Capri	6.00	8.00
11	Caribbean	6.00	8.00
50	Catalina		5.00- 6.00
40	Claridge	3.00	5.00
37	Continental	4.00	5.00
27	Cromwell	6.00	8.00
38	Croydon Arms	5.00	6.00
45	Del Prado	5.00	6.00- 8.00
53	Delano		10.00
56	di Lido		10.00- 14.00
47	Dorchester	4.00	5.00
41	El Morocco	5.00	8.00
44	Embassy	6.00	8.00
4	Empress		10.00- 14.00
51	Gale	4.00	5.00
5	Good	4.00- 6.00	7.00- 11.00
8	Lord Tarleton	10.00	12.00
49	Maxine		6.00
1	Monte Carlo	8.00-12.00	9.00- 13.00
54	National		6.00
30	Nautilus		15.00
12	Ocean Grande	4.00	5.00- 7.00
13	Patrician	5.00	6.00
10	President Madison	$7.00	$8.00
23	Promenade	8.00	10.00- 12.00
42	Rendale	4.00	5.00
32	Richmond	5.00	6.00
16	Robert Richter	6.00	8.00
25	Roney Plaza		10.00- 14.00
55	Sagamore		8.00
52	San Juan	5.00	6.00
6	San Marino	8.00	10.00
18	Sans Souci		10.00- 14.00
17	Saxony		12.00
34	Seacomber		10.00
26	Sea Gull		8.00- 10.00
31	Shelbourne	8.00	10.00- 12.00
48	Shelby	4.00	5.00
29	Shore Club		8.00- 12.00
14	Shoremede	8.00	10.00
2	Sorrento	8.00	10.00
33	South Seas	5.00	6.00
3	Sovereign		10.00
35	Surfcomber	8.00	10.00
36	Surrey		8.00
46	Town House		6.00
24	Traymore	5.00- 8.00	6.00- 10.00
19	Triton	4.00	6.00- 8.00
28	Vanderbilt	6.00	8.00
15	Versailles		8.00- 12.00
39	Wilshire		4.00

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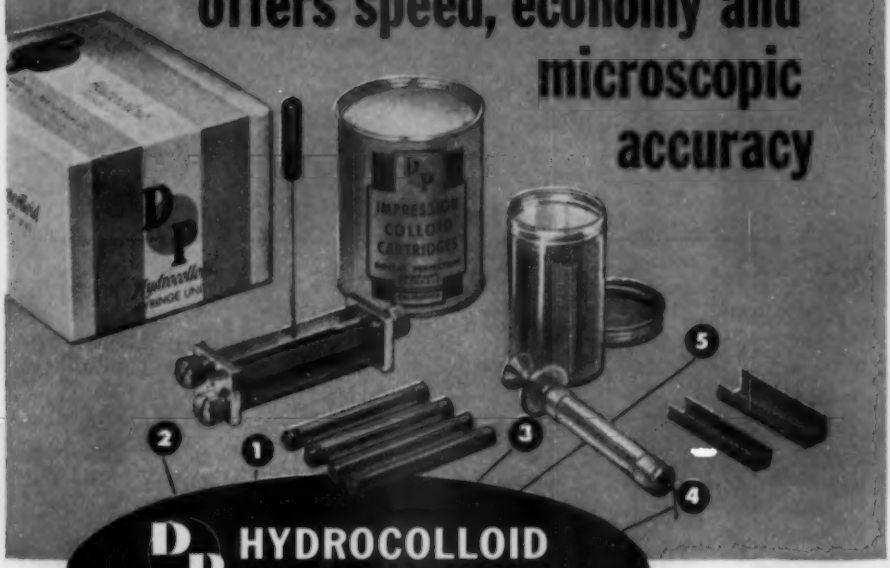

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